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We start this new year, our sixth, with the same enthusiasm that we had when we started our first year, except that this year it is even greater.

Ten years ago this spring Tandy/Radio Shack placed the Model 4 computer on the market. The Model 4 was such a giant leap forward in technology over the Model III. Who would have guessed that these powerful machines would still be going strong and still in demand today? But they are. And with the new and greater software and hardware products being introduced this year they will be even more in demand.

David Goben has just released MagicDraw, a mouse drawing program that has all the features of the MS/PC drawing programs. We have just completed the plug on clock and date project. This unit is the same as the ROMCLOCK that we have, except you do not have to open up your computer to install it. You simply plug it on to your the I/O bus connector on your Model 4P or Model 4 or 4D. Then like ROMCLOCK you have instant date and real time every time you boot up your computer. Like ROMCLOCK, the I/O-CLOCK exterior clock can be ordered with either TRS/LS-DOS (Model 4) or LDOS (Model 3) programs.

SUPER SYSTEM

We must tell you about our personal dream system. As we have mentioned many times over the years, a minimum system for convenience of copying and backing up disks is at least three drives. Well, thanks to the development of the I/O-BUS Interface, here we sit at our personal work station with a Model 4 that has 4 5-1/4 drives and 2 3-1/2 drives all in operation at the same time.

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There is also a 10 meg hard drive connected to this work station along with a Dot Matrix printer, and a laser printer both controlled via an A-B switch so we can jump back and forth between the two without plugging and unplugging printer cables. The RS-232 connector has a three button mouse plugged into it. We would also have the modem connected to this machine, but that is connected to another workstation that has a dedicated phone line near it. Otherwise the modem would be connected to this workstation. Having this many drives on one computer may seem excessive to you, but during the course of the working day we are duplicating many disks of each size. We also receive disks from our readers and our authors which contain data to be transferred to our word processor program. And if you are wondering what word processor is used to create Computer News 80, it is SCRIPTSIT-Pro, which (in our opinion) is the best Model 4 word processor ever made for the Model 4. (And your opinion, which we know you have - be damned. -- We say that in jest, because that is the tone of the many letters we receive concerning the favorite programs that readers are familiar with. How can you claim your favorite is the best unless you have extensive knowledge of all the others?)

SCRIPTSIT-PRO

Unfortunately SCRIPSIT-Pro is out of print and has been off the market for sometime. But if you can find a legitimate copy on the used market it is well worth the purchase price, whatever the owner is asking for it. There is one great advantage to using SCRIPSIT-Pro over many others and that is that it is a very powerful what-you-see-is-what-you-get , as you type in the text. It has column addition abilities and tab to the period, even with proportional print drivers. The other great advantage, and perhaps it's most important feature is that it does not take any memory larger than 128K (which is required for its use) to create the great American novel length document. Or as large a document that you wish, without super memory capacities needed.

DISCOUNT TYPING ERROR

Some how our fingers just don't remember that New Years eve has come and gone - for about three months, usually. Our 10% discount coupon for 1992, is correct except it should say good till January 24, 1993.

How many times after the first of the year have you written a date on a check that still said it was 1992. It is twice as hard to make the typing fingers strike the right keys, especially when you are planning ahead. Or is it in the brain too. In any event your discount coupon will be honored during January 1993.

CREDIT CARDS

Again let us address the question of why we do not accept credit card orders. The reason is very simple. If we did set up a credit card system we would have to increase our price on everything from fifteen to twenty percent, including our subscription rates. We do not feel that this additional cost should be added to the price the user has to pay. Are you willing to throw away \$20 on a \$100 order? After all we accept your personal checks or a credit card check.

Some have said "Why don't you add an extra amount to those who want to buy using their credit card?" The answer to that is, because it is against the federal law to charge more for credit card sales than cash sales. Oh, you didn't know that! Many mail order houses still advertise a sur-charge on orders when you use a credit card. It is illegal for them to do so, but no one has complained so they get away with it.

For these and several other reasons we have no plans to install a system to accept credit card sales.

REMINDER

If the last four digits on your mailing label are 93/01, then this is your last issue. Time to get your renewal in the mail.

Moving?

Remember to send us your new address.

Bug Report

Henry Herrdegen reported that there is a bug in his program PGMREC3/BAS which is on our disk series 19.

Line 250 The closing quotation mark after the "file full,...." message got lost somewhere in the shuffle! (It is there in the Model 4 program.) It won't show up unless you exceed the 500 file limit, and it's easily fixed. Insert the quotation mark between the exclamation mark and the colon:

"....possible!";GOSUB..."

-Henry H. Herrdegen

Program Reviews

DISKOPT - A Review
by David P. Miller

DISKOPT by David Goben is a utility program designed to reorganize your diskettes or hard drive partitions, placing all files on the media in a contiguous fashion. During normal use, files become 'fragmented' as they are stored, removed, and updated. 'Fragmentation' is a term that describes the storage of a file in several separate locations on the media rather than in one continuous area. Since TRSDOS uses available disk space near the beginning of the disk first, a file can be broken into several sections while being written. This is, for all intents, invisible to the user and to programs accessing the file, but the fact that each portion of the file must be found when reading data from the file later can noticeably slow down operations.

DISKOPT solves the problem by moving the files stored on your diskette or hard drive partition, logically arranging their physical location on the media so that each file is stored as a single, continuous file and restoring the speed of disk operations to the maximum possible using TRSDOS and the media involved.

My test setup consisted of a Model 4P with a 20MEG hard drive connected and both 720K, 3.5" and 360K, 5.25" floppy drives; and a Model 4D with the same drive configuration. DISKOPT performed flawlessly in all tests.

The DISKOPT package consists of DIRCHECK, a program that examines, reports errors found, and can make some repairs on the directory structure of the media to be optimized; TESTFRAG, a program that reports the number of fragmented files on the media, and the DISKOPT program itself. Each of these programs will be covered in the following discussion.

I used DIRCHECK on each drive to be optimized, both floppy and hard. No errors were reported on any of my working disks/diskettes, so I manually 'hacked' a diskette with a total of 17 directory errors to see if DIRCHECK would find them all. These errors included erroneous HIT and GAT bytes, changing names without updating HIT bytes, and changing extents without updating GAT bytes. DIRCHECK found all 17 errors and reported them as 'Repairable'.

TESTFRAG is used to determine if optimization is desirable by reporting the number of fragmented files. TESTFRAG quickly scanned every disk/diskette I used it on, reporting fragmented files where expected (media not yet optimized), and reporting no fragmented files on any media already having been optimized.

DISKOPT, the showcase program of the trilogy, scans the drive and graphically displays a map similar to that generated by the 'FREE' command (similar because the entire DISKOPT display always fits completely on the screen). A prompt is then offered to allow you to proceed with optimization or quit. Upon pressing [ENTER], DISKOPT proceeds to move data, graphically displaying the operation in progress, and lists the name of the file being moved. DISKOPT worked perfectly while optimizing four hard drive partitions, and a 360K and several 720K floppy disks.

During the optimization process, I noticed that several (sometimes large) unused areas were left in between optimized files. At first thinking this was a failure of the program, I later realized that DISKOPT was placing files in such a way that they would not surround such items as system (/SYS) files that were not to be moved, or the directory cylinder, which is usually located at the midpoint of a disk. Thus, even

though you may wish to 'pack' all your files together, DISKOPT will not do so if it means splitting a file into two or more separate areas.

Overall, DISKOPT is quick, easy, reliable, and absolutely essential if you wish to maintain the maximum performance from your TRS-80 with a minimum of effort. Although much the same results can be achieved by backing up all files, purge all files from the media, and restoring them, the difference in time and effort saved by using DISKOPT is enormous.

-David P. Miller

ANSITERM - A review

by David P. Miller

The staff at CN80 selected me to review the latest copy of ANSI-Term for the Model 4 by Richard VanHouten. ANSI-Term is an update for the original version which ran only on the Model III under TRSDOS 1.3, which limited storage, displays and functions to those available on that machine and DOS.

The major 'draw' of the original version of ANSI-Term is the use of high-resolution graphics to display an ANSI-standard character set. ANSI characters are those used on 'PC'-compatible computers and therefore, when connecting to Bulletin Board Systems (BBS's), the menu borders and ANSI images developed by the System Operators (SYSOPs) can be viewed correctly on the TRS-80.

This can be extremely useful when calling local BBS systems because the standard TRS-80 character set causes the replacement of ANSI 'box' characters with (usually) capital letters. When a menu is bordered with an ANSI box, the result is frequently almost impossible to read on a TRS-80. Also, some BBS's offer on-line games using ANSI renderings, which leaves most TRS-80 users out of the picture. Finally, callers of BBS systems such as offered by Seagate or Western Digital are able to download documentation files that give specifics on various hard drive 'bubbles' and controller boards. These files almost always make use of ANSI graphics to depict the location of jumpers, connectors and various components of the hardware. By loading the resulting

file in the buffer and viewing it (when off-line after the call) you can gain valuable information on such equipment.

In the newest incarnation of ANSI-Term, several improved and advanced features are offered. The screen display is composed of 30 text lines instead of the 24 normally seen on the TRS-80; support for AVATAR control codes is included; three 'loadable' display fonts (two 'PC'-style and a TRS-80 font) are provided with a font editor to allow development of other needed fonts; baud rates up to 19,200 work flawlessly; two transmission protocols infrequently supported by other terminal software is included: X-Modem 1K (also called 1K Y-Modem) and Y-Modem Batch; and keyboard macros can be developed, stored and easily used. Each of these features will be covered in the following discussions, along with other features and subjects.

First, the text display: the 30-line display allows more information to be shown on the screen at one time before scrolling off into 'lost-bit land'. This can be useful, as trying to read a message even at 2400 baud is difficult. I have frequently 'paused' a message from a BBS only to find that the information I wished to review was already gone. The additional six lines of text gives you a 'second chance' to get the information you want without starting all over again.

Second, the AVATAR control codes. As stated in the documentation for ANSI-Term, this is probably the only TRS-80 program supporting these codes. To be honest, I know of no system that uses AVATAR codes anyway, so I wonder about the need to support them. To be honest, I don't know what AVATAR codes are or what they are supposed to do. I suppose if you need them, however, they are indispensable.

Next comes transmission speed. ANSI-Term is the ONLY terminal program I have used that sends and receives data at 19,200 baud without error. My experience with TRS-80 terminal programs includes almost every such program written, and with only one exception I have seen them all 'blow a fuse' at speeds over 9,200 baud when higher speeds are offered. Transferring data at 19,200 baud with a null-modem cable is much faster than any disk transfer program. Doing so with ANSI-Term is a pleasure.

In transferring files, I used a setup consisting of a null modem cable, and connected to a 'PC'-compatible computer that provided a limited BBS system. Downloading files from the 'Host' to my TRS-80 went smoothly regardless of protocol; using the Y-Modem Batch protocol I watched over 500K of data being moved quickly to my TRS-80's hard drive in just a few seconds. This was accomplished using 'wildcard' characters, and the 'Host' supplied the filenames. No loss of data was found despite the 19,200 baud transmission speed, and end-of-file was properly set.

Because of hardware problems, I was unable to test the operation of sending files to the Host computer (BBS). This was NOT a problem with ANSITERM, as I tested the setup with several other communications programs; all with the same result. In fact, after setting up a connection with a Model 4 TRS-80 at each end, I still experienced problems with other communications packages, but ANSITERM worked perfectly (as far as making connection). Transmission of files using X-Modem protocol worked perfectly, transferring files at 19,200 baud with no loss of characters. However, several problems arose with the various file transfers.

While file transfer using X-Modem proceeded flawlessly, the end-of-file was not correctly set. Instead of the 537-byte file size of a typical test file, the received copy was listed in the directory as 640 bytes (five 128-byte X-Modem 'packets'). The contents of file, when examined, now included erroneous data located in the previously unused portion of the last sector. The author assured me that this was normal and could not be prevented using the X-Modem protocol.

Sending files using 1K Y-Modem and Batch Y-Modem were even more distressing. Although Batch Y-Modem correctly picked up an appropriate file using a 'mask' and sent the filename to the receiving computer, neither of these protocols knew when to stop. Transmission of a 3K file using 1k Y-Modem resulted in 149K of data being sent to the receiving computer before I hit the [BREAK] key. Upon examining the directory of the receiving computer, the file was indeed recorded as 149K in size. The same situation occurred during Batch

Y-Modem transmission, with 21K sent on the aforementioned 537-byte test file. When these problems are corrected however (as they surely will be in short order), the availability of Batch Y-Modem protocol using wildcard 'masks' will be a quantum leap forward in TRS-80 communications.

Keyboard Macros are used to send often-needed sequences to the 'Host' computer and allow one to quickly generate these sequences with only a few keystrokes. For examples, your logon I.D. may be assigned to one key and your password to another. This would allow you to log on to a BBS quickly with a minimum of effort and without having to remember your password. In addition, ANSI-Term lets you save several macro files and load them at will. This means you could set up a macro file for each BBS you call and use different I.D.s and passwords with a minimum of fuss. ANSI-Term's Macro facility worked flawlessly.

Other comments: As noted in the ANSI-Term manual, screen updates (scrolling) require a noticeable amount of time and can even result in the loss of information as text continues to come in but the hardware is unable to keep up. This is understandable, but nevertheless may affect your decision as to the value of the program.

In conclusion, I feel that ANSI-Term, while providing difficult to obtain services in displaying ANSI graphics and supporting high-speed transmission, may not appeal to everyone. This is a result of hardware limitations (high-resolution graphics boards) and economics (paying for connect time to display ANSI pictures.) If you call local BBS's that use ANSI characters and have a Microlabs board installed, or if you are solely interested in high-speed file transfers, ANSI-Term will admirably fill your needs (when the file-transmission problems are corrected). However, if no local BBS's are available to you, if you have the Radio Shack board, or you are primarily interested in message conferencing, you may find the showcase features of this program less important than the inconveniences caused by the real-time screen updates: slower display, possible loss of characters.

-David P. Miller

THE ARRANGER II: A REVIEW

by Mark Allen Reed

In the days of single sided, single density, 35 track disk drives, keeping track of your files was easy; each disk didn't hold very much, so all you needed was a stick-on label and the DIR command. But today, with double sided, double density, 40 and 80 track drives, it has become easy to forget which file is on which disk.

The Arranger II, by Dan Foy, is an automatic disk indexing system that was designed to help alleviate this problem. Its self-booting disk works on the Model III, the Model 4 (in Model III mode), and the Model I (if it is equipped with a double density adapter). The Arranger can automatically read all DOS types associated with these computers.

THE PROGRAM

The Arranger works by scanning the disks in your library and saving pertinent information on its own master disk. Your first step after making a backup copy of the program is to repeatedly use the "Add" command.

After your disks have been scanned by the Arranger, you can use the program to obtain a lot of different information. If you are trying to find the files WUMPUS/BAS and WUMPUS2/BAS, you can search for all copies of them on all disks with one command. If you want to know which disks have at least 100 granules of free space, the Arranger can find out with five keystrokes. If you want a sorted listing of all /CMD files, the Arranger can do the job very quickly.

The Arranger's filter mode can create several mini-libraries within the main library. For example, you can limit searches and listings to disks whose names start with "D," or to system disks, or to LDOS and DOSPLUS disks, or to disks with 35 tracks. Finding all DOSPLUS BASIC programs is easy: change the DOS type filter to DOSPLUS and search for programs with an extension of /BAS.

The Arranger can also produce print-outs of anything you see on the screen, and it can print disk labels on standard 3 1/2 by 15/16 inch mailing labels. The labels contain only

the disk name and statistics, however; no filenames are included. Other Arranger commands let you scan disks, manually add non-standard disks to the Arranger's library, update disks after changes, and rename disks. And making a backup copy of the Arranger is easy; just press "B" and place a blank disk in the appropriate drive.

THE DOCUMENTATION

The Arranger's instruction manual is a nicely-printed sixteen-page booklet (including one page for notes). It includes a table of contents, an index, and a technical specification sheet. The manual is very complete and well thought out. For example, error messages are explained in the same section as the commands that might cause them, rather than in an appendix at the back of the book.

A COMPLAINT

The Arranger expresses free disk space in granules, but I like to express it in kilobytes (as LDOS and LS-DOS do). It would be very nice if the Arranger let you use both granules and kilobytes as units of measurement.

CONCLUSIONS

The Arranger is a nicely constructed disk indexer for people who want a better way to keep track of their files. If your idea of a disk indexer is a good memory, then the Arranger is not for you. But if you have been looking for a program to help you keep track of your files, then the Arranger is the best there is.

The Arranger costs \$39.95 (plus \$3.00 for shipping and handling) and is distributed by Computer News 80.

-Mark Allen Reed

(Editor's Note) The Arranger II program was written ten years ago, and the authors no longer have the source code or any desire to update the program. It was through the ongoing insistence for over a year by CN80 that the program was brought back to life so that users could take advantage of it's unique abilities. Maybe some programmer will pick up the challenge to write a similar program that would bring its features up to date, and add the ability to add comment lines. Until then it is the best we have for the job that it does. -CN80

MagicDraw

An Introductory Overview

By David Goben

MagicDraw is a mouse-driven program that is the most powerful Model 4 high-resolution (hi-res) drawing program ever produced. It has more features, it is faster, and easier to use than any other hi-res artist program yet developed. It's also economical, selling for 1/4 the cost that it should be sold for. MagicDraw is available for \$65 (US) plus \$4 S&H from Computer News 80. Additional font disks are sold separately.

YOUR SCAVENGER HUNT LIST

To use MagicDraw, you need a Model 4 computer equipped with at least 128K of memory (the additional 64K of memory to make 128K is available at \$12.95 + \$4 S&H from CN80, if you are among the last few not to have it). You also need to be using TRSDOS 6.2.x or LS-DOS 6.3.x (6.3 recommended). Other hardware required is a High-Resolution graphics board, either the Radio Shack board (no longer available) or the Micro-Labs Grafyx Solution board (\$99 + \$4 S&H from CN80). Because MagicDraw is a mouse-based program, as opposed to most other, keyboard-based programs, you will also need to have a 3-button serial mouse. A 2-button mouse is OK, but they are harder to use with MagicDraw. The 3-button mouse should be compatible with the Mouse Systems/Logitech standard, as is the mouse sold by Computer News 80 (\$26.95 + \$4 S&H). A 2-button mouse should be compatible with the Microsoft standard. You will also need a mouse driver. Mouse+ (Mouse Plus, \$10 + \$4 S&H from CN80) version 1.2 (or later) is highly recommended for the very best results. Other, or older drivers may not work as well as this version of the driver.

Boy! That last paragraph looks more like an ad than a part of a program overview. However, this is necessary because what you need to use this new program is "stuff" that most people do not yet have as standard equipment on their Model 4s, and they will want to know where to get it if they want to use MagicDraw.

EVOLUTION OF A PROGRAM

A year ago Stan at CN80 suggested that I write a mouse-based drawing program for the hi-res board. At the time being buried

under other programming projects, I quickly countered that a public domain mouse-based program which I helped update to the new mouse standard should be good enough. So why bother re-inventing the wheel? As always, Stan was quick to point out that the program was limited in that it required the user to have GBASIC to run it (this left Radio Shack hi-res users out in the cold), and the program supported a font format that was no longer supported and whose proprietary data format was not legal to distribute. I sighed, and not wanting to bury myself in another project, I said that I would simply convert the program over to BASICG so that Micro-lab's users could use the GBASIC version, and Radio Shack users could use my BASICG version.

A couple of weeks later I had just about finished the conversion. However, I found myself highly frustrated by the inherent slowness of BASIC, and so found myself writing more and more machine-language subroutines to speed things up, until my version of the program looked more like a machine language program with a BASIC driver than anything else. So I decided to scrap the current project and write a machine language program which would work with both types of hi-res boards (just as Stan wanted me to do in the first place). Two more weeks later I had finished the program. As was its design, it was a simple drawing program that allowed the user to do free-hand drawing, draw lines, squares, type text using various font files, etc., all by using the mouse as a medium for pointing around on the screen. However, I was very dissatisfied with the user interface. It was like driving in the dark with the lights turned off. To recall commands, you had to have a command summary sheet close by for reference, or keep selecting the help screen. This just wouldn't do.

Instead of going ahead and submitting the finished hi-res drawing program to CN80 for distribution (at this time called MPAINT), I decided to install a friendly, easy to use user-interface. I chose to use a windowing technique that I had been toying with for some time. I began using windows as far back as 1984 when I wrote my first Model 4 version of my SCRIPT word processor. This was the simplest of windows in that the entire screen was a window into a block of memory resident data. This

approach allowed for super-fast updates, as opposed to addressing individual points on the screen, which is much slower (VisiCalc used this later, snail-pace approach). I also incorporated it into my public domain UTILITY4 disk utility program (now at version level 1.4). I began using small windows on the screen when I introduced BusyCalc, and later BCX, my two powerful spreadsheet programs. But now that I had been playing around with mixed screen techniques that are available with the hi-res boards, I was anxious to incorporate these ideas into a useful program.

After evaluating numerous approaches to windowing, I decided to incorporate the method used by Macintosh and IBM PC's which used menu bars and drop-down windows. A menu bar is simply a highlighted line on the screen which has a number of options listed within it (called primary options). The theory is that the user will select an option (in our case with the mouse pointer). And once an option is selected, a small window appears to drop down below the option, which contains a list of secondary options that are related to the primary option. The user then selects an item from this secondary list, which may lead to an immediate task being accomplished, or another window being displayed which lists items related to that secondary option. (For those who do not know what a mouse pointer is; it is visually representation of a free-floating "cursor" on the screen, usually an arrow, which can be moved by the mouse so as to point to different positions on the screen).

After having programmed this windowing feature, I was suddenly dissatisfied with the entire program. After all, its windowing menu system was the most impressive feature of the entire program. I felt that if a program had a menu that was powerful, it should also be a very powerful program itself.

It was at this point that MagicDraw was conceived. I decided that the only way for me to satisfy my insatiable quest for quality software was that I could do no less than write the most powerful program I could. With this settled in my mind, I set out to incorporate as many features as I could, yet still keep the program easy to use. After 5 weeks of programming, I finally burned out

on the project. It was getting to be Summer, I needed to relax, and other projects were falling way behind. So I put MagicDraw (still called MPAINT so far) on the shelf, until I could recharge my batteries.

Not long ago someone made the snide comment that "until a 'promised' machine language drawing program is released, if ever, you can instead satisfy yourself with..." blah, blah, blah. This got David's goat. I had just finished writing the software for the I/O-BUS external drive (something I now wonder how I got along without on my Model 4P -- kind of like a microwave, I guess), and was thinking about finishing up my 3/4ths-done SMALL C manual. Suddenly SMALL C got pushed back on the shelf. No one makes snide comments about me and gets away with it, especially if they won't say it to my face. So David went full-bull into the hi-res project again.

Each day a fistful of features were added. Each day I had invented a brand new approach for accomplishing a task. Finally MagicDraw was getting so big that I was running out of room. But I still had features that I needed to add. To get around these problems, I had to invent totally new algorithms for accomplishing tasks. For example, painting a section of the screen is a complex process. I had to invent a shorter way of doing it. In the end I accomplished that with an =incredibly= short routine, but at the same time I also made it even more powerful than most other painting methods. Indeed, this is the very first time on any computer that my particular super-memory-efficient approach has been used.

Another approach I had to invent was a way to draw circles and ellipses without having to incorporate long and drawn out single precision math routines to derive sine and cosine values. Although I had already written such routines for both my BusyCalc and BCX spreadsheet programs, I thought it a terrible waste of program space to include such huge routines to simply support one feature: circles. Normally, to draw a circle one must start with the radius of the circle, and an angle (called theta, for some reason). What one does is multiply the radius times the cosine of the angle to derive the "x" horizontal offset from the starting point (the base of the radius), and multiply the radius times the sine of the angle to obtain

the "y" vertical offset. What this results in is the x/y coordinates for a single point along the radius of a circle. Therefore, and as any of you who have used BASICG and GBASIC can attest, drawing a circle is a long, drawn-out process, because each individual point on the circle must be computed using this polar-to-rectangular conversion method. That's a =lot= of single-precision math, and thus a lot of time, and thus a slow process.

I finally settled on an amazingly short routine that used very =simple= integer math. It dawned on me that a circle is a perfect example of 8-quadrant symmetry, and so all one would have to do is calculate just 45 degrees of the circle, and the remainder of the circle can be automatically derived. This task was thus accomplished by utilizing a variation of Breseham's line algorithm that added variable offsets to both axis, rather than just one. What resulted is a circle being draw so fast on the screen that that there is no need for the "traditional" approach of simply drawing a cross-hair proxy until it is sized right. Using MagicDraw, you can see exactly how the circle will look as you adjust its size.

Even the zoom mode ("fat bit editing") was not good enough until I added an overlay grid so that you could see precise separation of cells. It also features an "actual size" inset at the top-left corner of the screen. Further, you can use the arrow keys and shifted arrow keys to scroll the zoomed image around. You can watch updates on the inset and main screen at the same time. This is the best zoom mode that has ever been developed for the TRS-80. Fine detailing was never so easy.

There are in fact so many innovations in this program using technology which had never before been used on the TRS-80, that it makes it the most innovative (and for me, my most ambitious and most complex) program ever written for the Model 4. Were we in the hey-day of the TRS-80, I could charge in excess of \$240 for this program, and it would have sold like hotcakes (so lucky you that the market is not as broad as it once was, so you can get it for about 1/4 the price).

Well, enough boasting. Let's get into exactly what MagicDraw can do for you.

MAGICDRAW FEATURES

Where does one start? Most drawing programs have a couple of dozen features. Examples are Scott McBurney's DRAW program, Micro-Lab's Pro-Draw, and PowerSoft's Power-Draw (a lo-res program). MagicDraw features several times that. So there is little that it cannot do. Indeed, most of the "standard" features common to drawing programs are enhanced in MagicDraw. This on top of the easiest positioning system you ever saw for accurate item selection and placement.

The Mouse

The mouse plays a crucial role in MagicDraw. Without it you cannot do anything. A mouse is used as an alternative input device, rather than relying on keyboard controls. Drawing programs that require "free-hand" drawing using the arrow keys are a farce. The mouse frees you to accomplish drawing tasks that could never be done before, except by using the most sophisticated methods. A mouse makes such tasks a breeze.

The mouse interface has been incorporated into MagicDraw in such a way as to provide incredibly smooth, accurate control. It is in fact so smooth that the mouse will seem like a natural part of the Model 4 interface. Indeed, once other programmers see what MagicDraw does with a mouse, hopefully they will "jump on the bandwagon" and begin producing mouse-based software (I'm already toying with mouse-based hi-res versions of Monopoly, Othello, and Mahjonng -- but these won't be out for a while).

When you activate MagicDraw, an "Intro" screen is displayed, which instantly disappears when the mouse is moved (you can alternatively keep the hi-res buffer intact by executing MagicDraw with a trailing asterisk so that you can edit the current contents of the hi-res screen). The mouse pointer is a non-destructive 8x8 dot arrow pointing to the upper-left (it will point down, right, or down-right if you point to the lower and/or right ends of the screen). This is the pointer (pen) used for free-hand drawing. You can begin drawing by holding the left mouse button down (the mouse has its "tail" coming out the front, away from you). Release the button and you stop drawing. (There are actually a total of

40 mouse pointers in all, each representing a different function or task.)

By pressing and releasing (clicking) the Middle button (both left-and-right buttons if you are stubborn and are using a 2-button mouse) activates and deactivates the menu. The right button aborts all functions except text prompts, where keyboard input is essential, such as specifying a filename).

The Menu

The menu bar is displayed non-destructively at the top of the screen (non-destructive means that it will not destroy whatever it overlays -- it does this by temporarily storing the overlaid data in a storage area in memory). The options initially offered are: FILE, EDIT, ALT-SCREEN, FONT, PATTERNS, POINTER, OPTIONS, and CONFIGURATION. When you activate the menus, you will notice that in the menu mode that the mouse pointer takes on a gray shade of the initial arrow shape. When you point to one of the options on the main menu and "click" the left button, a sub-menu for that option drops down. As you move the mouse along within the sub-menu, a reverse-video bar is displayed at the current selection. As you move the mouse pointer up or down, it moves right along with it. This way you will see exactly what you are choosing if you click the left mouse button again.

THE FILE MENU

The FILE menu option offers you 8 sub-options: NEW, LOAD, SAVE, SAVE AS, AUTOSAVE, CLIP 'N' SAVE, DOS SHELL, and EXIT.

NEW allows you to erase the contents of the screen. When selected, you will need to click the left button again, or press ENTER to confirm this action.

LOAD allows you 3 sub-options: load a screen file, load a clip file, or load an icon file. A Screen file can be one of any 3 different formats: The old HR screen dump format, the newer crunched (CHR) format, or the newest supercrunched (SHR) format.

A clip file is a file that is of a variable size, up to the size of the screen, which can be inserted (pasted) anywhere. You will be prompted for the name of a clip file

(having a default extension of /CLP). Once MagicDraw finds the file, it will display the clip nondestructively on the screen, surrounded by a box. Use the mouse pointer to position the clip exactly where you want it, and click the left button to paste it in, or click the right button to abort.

An icon file refers to a PostMaster icon file. You will be prompted for the filename of the icon file (with a default extension of /ICN). MagicDraw will then load up to 15 icons (5 x 3) onto the screen. If there are more than 15 icons in the file (there can be as many as 30), then you will be prompted to press ENTER to display the next grouping of icons, or BREAK to keep the currently displayed icons. Hundreds of icons can be found in THE FILE CABINET. You can use these icons by subsequently clipping them and inserting them into your current drawing project.

SAVE allows you to save the contents of the screen to the currently defined file. If no file has yet been loaded or saved, then you will be prompted for a filename. Like LOAD, save supports the /HR, /CHR, and /SHR file formats.

SAVE AS allows you to save a file to a new or different name.

AUTOSAVE sets (or resets) an internal flag that tells MagicDraw to automatically save the current screen to a file if the user specifies NEW, exits, or tries to load a new file. When AUTOSAVE is active, you will see a "+" marked to the left of its menu entry.

CLIP 'N' SAVE allows you to select a portion of the screen and save it to a disk file. When you select this option, a "pac man" mouse pointers appears, which you can position to any corner of the area to save (the left end of this mouse is the "focal" point). Click the left button and move the mouse pointer to the other corner of the block to save. A non-destructive box will be displayed around the currently selected area. Once you are satisfied, click the left button again and you will be prompted for a filename to save the clip under. This method is great for saving (and subsequently loading) ready-made icons. These have uses in transferring artwork between designs, giving children an easy artist palette, or

even fast electronic design using ready-made components.

DOS SHELL allows you to execute a library command, or even execute a support program (such as MagicDraw's printer support modules). You can even execute your own program if it executes in the 2400H-2FFFH or 8000H+ memory regions (they =must= of course not tamper with any memory in the 3000H-7FFFH region, and must return via a RET instruction rather than an @EXIT SVC). This command is handy to read the directory of a disk.

EXIT of course exits to the DOS prompt. If any changes have been made to the current screen, you are notified of this (autosave will instead automatically save the file), and prompted accordingly.

THE EDIT MENU

The edit menu offers you the following selections: CUT TO CLIPBOARD, COPY TO CLIPBOARD, PASTE CLIPBOARD, MULTIPLE PASTE, LOAD CLIPBOARD, SAVE CLIPBOARD, VIEW CLIPBOARD, and ERASE CLIPBOARD.

CUT allows you to cut a section of the screen out and save that section in an internal "clipboard". A pair of scissors appears on the screen. Position them to one corner of the area to clip, click the left button, move the box around the desired area, and click the left button again.

COPY is like CUT, except that the area is not erased.

PASTE allows you to insert the contents of the clipboard onto the screen. It works like the load clip feature in that the clipboard data is displayed nondestructively in a box which you can position where you want it on the screen.

MULTIPLE PASTE allows you to use the contents of the clipboard like a rubber stamp, in that as soon as you paste the image onto the screen, you can immediately reposition the cursor and paste another, and another... until you click the right button to abort.

LOAD CLIPBOARD allows you to load the default clipboard file (MAGICDRW/BRD). This file is the same format as the /CLP

clip files, and you can use DOS SHELL to copy its contents to a /CLP file if you wish, or copy a /CLP file to it. This clipboard file is like as fast clip file, but is more limited in size (cutting and copying will not allow you to select the entire screen, for example).

SAVE CLIPBOARD allows you to save the current contents of the clipboard to a file called MAGICDRW/BRD. This file can later be reloaded during a later session with MagicDraw.

VIEW CLIPBOARD allows you to see what is currently saved in the clipboard. This gives you a handy peek to ensure that its contents are what you intend them to be.

ERASE CLIPBOARD simply disables the current contents of the clipboard.

THE ALT-SCREEN MENU

The alt-screen menu offers you these features: SAVE TO ALTERNATE (save the screen to the currently defined alternate screen buffer), RESTORE ALTERNATE (reload the screen with the contents of the current alternate screen buffer), and SWAP W/ALTERNATE (this allows you to exchange the contents of the screen with the contents of the current alternate screen buffer). Additional options are merge, XOR, overlay, and underlay the current alternate screen buffer with the current screen. A final option in this area is CHOOSE ALTERNATE, which allows you to select which alternate screen buffer to use as the "current" alternate screen buffer. If you have a 128K machine and have both additional banks free (MagicDraw needs at least one), then it will set aside any additional free banks as alternate buffers, up to 10 (0-9). Most computers are configured for only 2 banks, and so you can have only up to 2 alternate screen buffers.

THE FONT MENU

The font menu offers you the following options: LOAD SOFT FONT, DISABLE SOFT FONT, USE EDITOR FONT, FONT EFFECTS, FONT SPACING, and INFO ABOUT.

LOAD SOFT FONT allows you to load a soft font for inclusion as text data on the hi-re screen. The soft fonts, noted as files with /MDF extensions, are stored in a proprietary and copyrighted format

developed for easy use by MagicDraw (MDF stands for MagicDraw Font). This format allows for incredibly fast access and transferal to screen with additional optional special effects (see FONT EFFECTS). When a soft font is loaded, the mouse pointers becomes an "I" beam, where the top-left corner denotes the start top position for each character. Unlike other draw programs, you can use the mouse to position the I-beam at any time to wherever you want. This positioning also marks the left margin for the typed text. As long as the mouse is not moved, any typed data can be erased by backspacing using the BACKSPACE or left arrow keys. Please note that the size of the I-beam matches the font height, so you always know what kind of spacing to expect before you type the first character.

DISABLE SOFT FONT simply turns the current soft font off. Other wise it stays active in the background, and can be re-selected by choosing TEXT under the POINTER menu option.

USE EDITOR FONT allows you to type using a fixed-pitch font built right into MagicDraw. Notice that the font is a bit-for-bit copy of the standard screen text characters. In fact, one of my testers thought I had simply cheated and used the computer's own character set using a mixed-screen technique, until he used the eraser and erased half a character.

FONT EFFECTS allows you to display the soft fonts and editor font in one, or a combination of enhanced effects: bold, italic, and hollow. Bold broadens the character, italic adds a rightward slant to it, and hollow displays the character in outline form. There are additional effects that we do not have room here to discuss.

THE POINTER MENU

The pointer menu allows you to choose the type of drawing you wish to do. PEN is the standard mode. It allows you to draw free-hand designs on the screen. LINES allows you to draw straight lines. RAYS is a special effects feature that allows you to draw an continuous array of lines from a central point to the current pointer position. This effect has a lot of used in art designs. TRIANGLE allows you to draw triangles with minimal fuss by marking to the base points and then fine-tuning the apex point

to wherever you choose. BOX allows you to draw 4-sided objects with 90-degree corners. QUADRILATERAL allows you to draw 4-sided objects that do not have 90-degree angles. CIRCLE allows you to quickly draw circles. ELLIPSOID allows you to draw ellipses. BRUSH allows you to dab or drag a brush on the screen with a selectable brush width. SPRAY allows you to spatter paint onto the canvas. PAINT allows you to fill a section of the screen with a solid or styled pattern. You can use the usual solid colors, choose from a quick-and-dirty palette of 256 different patterns (see PATTERNS), or use a more sophisticated tiling patterns, which allows you to add fantastic designs to the painted area, such as gray, crosshatches, angular lines, or whatever design you choose (I like to use 8x8 bit graphics for fascinating effects -- they can be as large as 8x16 bits). TEXT allows you to reselect an active soft font. EDITOR FONT activates the built-in editor font. ERASER allows you to erase sections of the screen by holding down the left button and dragging the eraser (the size is user selectable).

THE PATTERN MENU

The pattern menu allows you to select how you want lines to be drawn. You can choose from a quick display and choose from 256 different patterns, or you can design line patterns that can be up to 16 bits wide, offering you the ability to design special dashed sequences. You can also select the paint palette here. You can choose between the quick and dirty pattern menu, or get more refined and design your own paint patterns that can be anywhere from 8x1 bits to 8x16.

THE OPTIONS MENU

This menu allows you to add some of the more interesting effects to your artwork.

By selecting ZOOM, the mouse pointer becomes a magnifying glass tacked onto the corner of an 80x24 dot nondestructive box. Position the box where you want to zoom in on, and click the left mouse button. You are instantly brought in close-up to your work. You will notice that the screen is overlaid with an 80x24 grid so that you can discern spacing between pixels (picture cells). In the upper left corner is a small 80x24 dot insert of the actual size of the area being displayed in zoom mode. You use the left button to set bits, the middle button to

erase them, and the right button to leave the zoom mode. If you need to move the zoom field around, you can use the arrow keys to move a fat-bit at a time in the four cardinal directions, or use shifted arrows to move in bigger increments. Notice that the insert updates right along with the motion of the zoom field. Also notice that you can watch dot editing being updated right on the insert.

INVERT allows you to invert the entire screen, or just a portion (block) of it. MIRROR allows you to mirror the entire screen, or just a portion of it. NEGATE allows you to flip bits on the entire screen, or just a portion of it. CLEAR BLOCK allows you to erase a portion of the screen. Rotate allows you to rotate a portion of the screen.

SCALE DOWN 4:1 allows you to scale the screen, merging 4 bits into 1, making the screen 1/4 its original size.

SCALE DOWN 3:2 allows you to scale the screen, compressing 3 dots into 2, thus the final screen is only 2/3rds its original size.

SCALE UP 1:4 quadruples the size of a selected portion of the screen. You move a 320x120 box around on the screen to choose the area to enhance. This option actually doubles the size of the selected data. I've had a lot of fun blowing icons up in size and then using zoom to add fine detail to them, thus converting them to highly detailed renditions of the originals.

VIEW X/Y allows you to see the current X (horizontal) and Y (vertical) coordinates of the mouse pointer on the 640 x 240 screen field. This allows for highly accurate positioning.

MOVE SCREEN allows you to roll the screen left/right and up/down.

THE CONFIGURATION MENU

The final menu allows you to configure certain features of the program to your specifications, usually how something is applied. The first option allows you to select if you want the free-hand pen to draw points "on" or "off". The second selection allows you to choose the size of the free-hand pen, from 5-dots wide to 1. The ERASER SIZE and BRUSH SIZE options

allow you to choose the size of the respective items. The DRAW EFFECTS menu allows you to choose how lines are displayed. The CLIP EFFECTS option allows you to choose the method for how clip files and pasting are applied to the screen. For example, by taking creative advantage of the MATTE effect, you can actually place artwork into other detailed artwork using the same techniques used by special effects teams to overlay objects onto other objects.

OTHER FEATURES

I still have not covered all the features of MagicDraw. I even skipped numerous menu entries, or just skimmed them, for brevity. Once nice feature of MagicDraw is its use of the function keys. By holding a shift key down and pressing F1, F2, or F3, you can save the current position in one of three storage buffers. To recall a position, simply press the appropriate function key to reposition the mouse pointer at the exact position it was saved in for that key.

MagicDraw assumes that the name of your mouse driver is simply called MOUSE (as the MOUSE+ driver is). If when you execute MagicDraw, and it detects that the driver is not installed, it will leave, attempt to load the driver, and then re-enter itself. If you had included any options, such as "*" to preserve the hires contents, or a hi-res filename to load, these will be preserved as well, and specified after the mouse driver has been loaded.

If you do not specify anything, MagicDraw will save the current contents of the hi-res screen to the first (or only) alternate screen buffer, and clear the hi-res screen. You can then go to the ALT-SCREEN menu and select RESTORE to bring the original hi-res screen out from hiding.

CONCLUSION

I would go on, but I have already exceeded 5200 words, as SCRIPT has informed me. Like I said, MagicDraw has more features than you can shake a stick at. And at \$65, its a heck of a bargain.

-David Gobin

This 'n' That

by David P. Miller

Occasionally I like to ramble a bit, get things off my chest, pound the soap box, and clean up old business. The CN-80 staff is nice enough to put up with this Tomfoolery from time to time (don't ask me why...)

As many of you know, one of my 'soap-box' subjects is software piracy. This is understandable, as I write software for the TRS-80; piracy of my programs directly influences the rewards I realize for my efforts. What is sometimes less apparent is the detrimental effects on the general base of TRS-80 users when software is 'passed along'.

The Lotus Corporation has estimated that they have lost several million dollars due to 'PC' users pirating their spreadsheet program. Now that we're all tearful over poor Lotus' plight, let's examine the correlation in the TRS-80 marketplace. A TRS-80 software author has at best somewhere between one and two thousand possible users available to him or her as a possible market. When developing programs, appeal will be limited to a specific portion of this market. For example, programs making use of a mouse or high-resolution graphics limit the possible sales to those with appropriate hardware. With such a limited market, even a few 'lost' sales may make the difference that stops a programmer from developing his or her next program.

No one currently writing TRS-80 applications is able to live off the income; in some cases, the money may keep oil in the car (if it's not a 'leaker'!) but not much more. The primary incentive is a love of the machine and the desire to create something that the public can share in. Still, the fact that people are willing to pay for a product shows that they really value it and provides the encouragement to continue developing programs.

Now we can clearly see the adverse affect of 'sharing' or receiving commercial software; the practice can be the cause of an author giving up and NOT writing the next program. Quite possibly, the next one would have been the program that took the

world by storm and lent your TRS-80 a new lease on life.

To a lesser effect, the same situation holds true for public domain and shareware programs. Shareware, of course, is commercial software with all the same problems as any other commercially available product; just a different distribution method. Public domain (freeware) programs tend to be less capable programs and sometimes take enough of the market to adversely effect the commercial programs with which they compete, with the results already mentioned. Does this mean we should avoid public domain software? Certainly not! A commercial program that can't compete with a public domain program has no justification for its' existence.

However, there are some in the TRS-80 world that feel almost all software should be freely distributed and shared, apparently because the machines have been 'orphaned' by the manufacturer and cost less than most computers. This attitude, if it becomes common, will certainly be the death knell of the TRS-80. With no monetary support, new programs will be few and far between, less capable, and eventually there would be no source of either software or hardware for TRS-80 use.

Therefore, please heed the message currently being taught to children in schools these days: "Don't copy that floppy!". The adverse results of such actions hurt us as TRS-80 users more than it would hurt any other group of computer users.

The last word in security for software authors, of course, is the law. There are two forms of copyright: by publishing a program and including the year and copyright notice in the program, requirements have been met for copyright protection. However, proof in court of ownership is difficult for this type. Programs such as Lotus, Dotwriter, and PostMaster are on file at the Library of Congress and authors are given a Record of Copyright by the Registrar. This legal document makes ownership much easier to prove and protection more binding. With the backing of the law, an irate software author can sometimes recover substantial amounts in damages.

As with the programs themselves, the

formats of specialized files such as Dotwriters' fonts and PostMasters' icons are also protected. This means that writing a program that generates files in the same format, with the intention of using that format without the original authors' permission, places the secondary programmer at risk of legal complications. With this in mind, I would like to publicly state here and now that I am placing the format of all Font, Icon, and Border files used by PostMaster (but not the PostMaster program) in the public domain to be used by all freely.

-David P. Miller

(Editors Note) Let's clear the air on a very misunderstood principle. Just because a "utility" package exists on a bulletin board to move files from one program's media storage format to another program's media storage format it does not make it legal to transfer anything from one to the other, UNLESS you own a legitimate copy of both programs that you are transferring from-to and for your own use only.

David Miller has from the very beginning graciously given his permission to move icons and fonts or any other material from one source to his media storage format used by PostMaster. Again assuming that you own a legal copy of PostMaster. Once you have placed an icon in the PostMaster format you have been given permission by the author to place it on a bulletin-board, or give it to friends, or whatever else you want to do with it.

FILE CABINET VOLUMES

This is not true with the Icon Disk Volumes in the File Cabinet Library, which are copyrighted in their arrangement and may not be uploaded or given to anyone intact. If you want to excerpt individual icons from these disks and arrange your own catalog of files, that is OK. Maybe if you ever created and cataloged your own icon, font or other collection of public domain programs you might appreciate all the work that goes into such a project and not be so willing to give it away for free.

DOTWRITER AND OTHER FORMATS

Dotwriter and other media storage formats are copyrighted. And to use them for any other purpose than your own use is illegal,

without the authors express permission to do so. When the manuals for many programs were originally written and the collection of program files that came on the original disks had a "utility" to copy files to its storage media format or to another program's storage format, the authors of the program assumed that if you used the utility that you owned a copy of each program and would use it for your own use only. Some manuals were not too clear on this subject and assumed that you were aware of their intent of their copyright statements.

WHO CARES

Today in the TRS-80 community there are many who say "Who cares, the company is out of business." Maybe that attitude is exactly what put them out of business in the first place. Aside from the morally and ethically wrong practice of violating another's copyrights, it only serves to dilute the efforts of those who wish to write programs for and support (a very important word that -- support) your use of the TRS-80 computers.

People who would never dream of stealing an item in a store by shoplifting, sometimes think nothing of violating someone else's copyright. We are sure that you would never dream of walking into someone's home and helping yourself to a few disks or other valuables, or pushing yourself ahead of all the others that might be standing in line at a box office. It is the same thing if you violate someone's copyright.

One other point that we would like to mention here is a trend by some, to feel that software should be free. It is great that so many people have donated their work to the public domain sector and we are all grateful to them. But usually the programs donated for use by the public are considerably inferior to the programs that are commercially produced. And in reality nothing comes for free. An education does not come free, either at the grade school level or at the university level. It costs somebody either through taxes, or tuition. If you expect to learn something and be able to use that knowledge with the aid of a teacher it's going to cost. Then why all the hype by users who shout "It's the greatest because its free." They just are not thinking.

-CN80

TWO MODEL 4 BASIC PROGRAMS

by Roger L. Favorite

BLOOD/BAS

Enclosed is a program I use a great deal and others may find interesting and useful. It is named 'BLOOD/BAS' (program listing number three).

My wife is a brittle insulin dependent diabetic of over 50 years. She tests her blood sugar level 3 or 4 times each day and injects insulin of 2 types at least 3 times daily. She records these tests, the number of units of insulin taken and also makes notes of daily activity which sometimes explains high or low glucose levels.

These forms are used for reference and usually taken to doctor appointments which saves a lot of time in describing the recent control (or lack thereof).

This form works better for us than any that the drug suppliers offer. It covers a 2 week period and was intended to help identify and explain variations that might occur on certain days of the week or on weekends.

The printer used is an EPSON FX-80.

BIBLE/BAS

This is a program that can be useful in learning the books of the bible. It is really 3 programs: (The program is too long to be printed here, it will be available on CN80 Disk number 20.)

1. Randomly lists the 66 books of the bible and you are asked to identify whether each one is in the old or the new testament.
2. Randomly lists the 39 books of the old testament and asks you to sequence them in the correct order.
3. Randomly lists the 27 books of the new testament and asks you to sequence them in the correct order.

Each routine lists the books in the correct order for you to review prior to beginning the 'game' or 'quiz'.

Programs 2 & 3 will present each book as it was randomly assigned and asks which book number you would like to swap it with. After passing thru the list if you want to

change some of your assignments you can swap by entering your 2 choices. When you are satisfied with your sequences you end with a 99. The program then checks your entries and for incorrect choices displays the correct book number.

Some of the routines used in the program were germinated in CN80 but programmers just can't leave well enough alone so several modifications have been added. Most of the routines were home-grown as I have not seen another code for such things as making multiple columns of entries and then swapping the items around on the screen.

The keyboard input routine is one I use on all of the programs I write. It shows a variable length highlighted area for the entry field and also will detect the F1, F2 & F3 keys for other processing if desired (This program does not use any of the F keys).

The routine that 'scrambles' the book names on program #1 doesn't really do anything but it adds some excitement to the process. If its not wanted it can be bypassed by removing the REM in line 2008.

-Roger L. Favorite

A VISIT WITH DAVID GOBEN

by David Goben

I did not plan on doing a "Visit With" column this month, as I expended over 5300 words introducing you to MagicDraw in this issue. However, due to too much editing on my November column, I accidentally deleted some important information that I would like to clarify, and I wanted to address some issues brought up by readers.

DAVID GOOFED

Because of over-editing on my part, I accidentally removed some important information concerning the mouse support routine that was in my November column. Specifically, the \$TSTMSE routine. After the "AND 111B" instruction, the next instructions should have been "CP 111B". Without this, the routine will not work properly. And so, for clarification, following

is the proper code (unless I suffer brain damage and edit it again):

\$TSTMSE:

```
LD B,1 ;get mouse status
SVC 120
AND 111B ;mask buttons
CP 111B ;all up?
RET Z ;yes
PUSH AF ;else save buttons
PUSH HL ;save x coord
PUSH DE ;save Y coord
```

TSTLP:

```
LD B,1 ;get status again
SVC 120
AND 111B
CP 111B ;all up yet?
JR NZ,TSTLP ;no
POP DE ;else get y
POP HL ;get x
LD B,2 ;reposition mouse
SVC 120 ;to old position
POP AF ;get buttons
RET ;return status
```

In the above routine, if a "Z" state is returned, then you know that no buttons on the mouse have been pressed. If "NZ" is returned, then we know that at least one button has been pressed. On a mouse, (tech talk here, folks) bit 0 of the A register is reset if the right button is pressed, bit 1 is reset if the middle button is pressed (or both buttons on a 2-button mouse), and bit 2 is reset if the left button is pressed.

Further enhancements would be along the line of indicating if the mouse moved or not. By saving the last x/y coordinates and comparing them on each read, you could set the Carry flag if motion was detected. Combining this code, a Z state could indicate no buttons, NC indicates no motion, NZ indicates a button press, and the C (carry) state active if the mouse moved. This much more complex function is basically the theory behind how MagicDraw works with a mouse. An interesting side-note: I have attained truly incredibly smooth mouse control by simply stroking the keyboard if no buttons or motion is detected. Apparently this gives the mouse driver a short pause for settling.

Speaking of the November column, there is of course more to the Hi-res processing than what I delivered. For an excellent treatise on the subject, refer to Frank Slinkman's

article on that subject in the March 1992 issue of CN80 (Vol 5. No. 3). Though I don't recommend playing with Radio Shack's undocumented scrolling features, as are also laid out in his article, which would make your program's incompatible with MicroLab's board. But if you are simply writing for your own system, it may be a lot of fun to play with.

HARD DISK MORTALITY

I had a recent conversation with a fellow whose self-righteous pontifications had a familiar ring to it. He was relatively new to using a hard disk drive on his system, and he praised the "fact" that now there was no need to back up his files, because of the reliability of the hard disk over a (now) antiquated floppy-based system (who says floppy-based systems are outdated? Not me!). Yeah, right. Most of you know almost too well that I have always preached that hard disks =WILL= crash, and that you should always make periodic backups of the system. Using FASTBACK or FBACKUP, this becomes an extremely quick and painless procedure.

What made our conversation even more interesting is that he had the same exact hard disk system I had. What made me even more sceptical of his claim was that my hard disk had just two days before not only crashed, but had =died=. The actual hard disk drive, that is. Fortunately I keep an extra "bubble" on hand, so I quickly opened the case, exchanged the bad drive for a good one, reformatted the new drive, partitioned it, and restored my backup disks to it. I only lost one file.

Try doing that without backups. If I had not backed up my system regularly, and doing a constant backup of modified files to a work disk as I update the system, I would have totally lost my MagicDraw project, which I was in the middle of. As it was, thanks to printed hardcopies and meticulous penned notes of changes, I was able to recover my work up to my last save, and then spend 10 minutes typing in my lost lines of programming.

So far, I know of 2 TRS-80 Bulletin Board Systems (BBS's) that have dropped out of business simply because the operator never backed their system up, and so had no way of continuing, even though they obtained

new hard drives. And these were supposedly experienced users. Plain and simple, it's just stupid not to back up your system.

I think the thing that irritates me most about the fellow I spoke with is that whenever he picks up something new, suddenly out of the blue he makes himself out to be the "old vet" with the technology. What burns me is his castigation of others that "there is no need for backups with a hard disk." This guy is =NOT= a guru, as he wants to make himself out to be, but only a fool. His "I know better" recommendation to others can only lead to disaster for those who blindly follow this fool's advice. Unfortunately, I know of others like him.

And don't even get me started on the people who never back up their program disks, but use the originals (a shiver runs down my spine -- or is it just another New England winter settling in?). I love to hear from them when their disk crashes. The conversations usually go, ME: "Don't you have a backup disk to use?" THEM: "No, I never needed one before." I could take this act to HBO's Comedy Central, right after MST 3K.

DISABLE BREAK, CLEAR

A recent letter from one reader asked how to disable the BREAK and CLEAR key on the Model III, so that his students would be prevented from pressing them and basically disable the effectiveness of educational software. What is required is a small keyboard filter that will check for those keys. Program listing 1 is a BASIC program that will create a machine code program called KEY/CMD. Program listing 2 is the assembly code used to generate the KEY/CMD program, for those who prefer to hone their assembly skills. This program, though short, is smart enough to detect if it is already installed. If it is not, it will divert the keyboard scanning routine to its own, relocate itself into high memory, and protect itself up there, if other memory resident drivers are already up there. This program will check for the CLEAR key code (31) and BREAK (1), and simply ignore them. On the other hand it will check to see if the user is simultaneously pressing a SHIFT key, the DOWN ARROW key, and the letter "Q". If so, it will return the BREAK code.

Remember, once you have created

KEY/CMD, you have to actually install it by entering KEY from the DOS Ready prompt.

MAGICDRAW UPDATE

Since writing my overview, I have inserted numerous =additional= options and features (the advantage of pre-release). I've added the ability to preview "clip" files (partial sections of hi-resolution data). I've also expanded my list of font files to over 100, and provided 6 free font files on the MagicDraw disk, in addition to the font resident within MagicDraw (called the Resident Editor Font). I've also created an additional disk which contain 16 hi-res files that display samples of all these fonts, to show you what they will actually look like on your screen. This disk will be provided as a free, though connected part of the MagicDraw package (thus this added disk is =not= public domain, folks. Besides, they are stored on disk in a copyrighted format of my own invention).

But if 110 available fonts is not enough, I'm checking into the feasibility of being able to convert more fonts to MagicDraw format. With all these fonts, I'm thinking (already figured out) about also doing a desktop publishing program to take advantage of the fonts and clip files, so that you can mix text and pictures on a letter. Such a program would allow justified text, wrap-around of clip art, etc. Gee, now if I only had the time to do it in a timely manner.

Speaking of clipart, because MagicDraw allows you to break the 88 x 52 bit barrier on graphic pictures (clips can be as big as 640 x 240 -- but this may not be a limit with Desktop Publishing), CN80 will soon be offering MagicArt disks each of which are loaded with about 40 clip files (clipart). Fact is, I'm already working on them. This clip capability opens up a whole new avenue for the TRS-80 that had never been possible in an easy-to-use way before in any art program.

POSTMASTER 24

As most of you know, POSTMASTER 24 is an "add-on" product to be used with David Miller's POSTMASTER program. This add-on allows users of Epson compatible 24-pin printers to use POSTMASTER efficiently, and at the same time allow them to produce

laser printer-quality printout.

A couple of people who have obtained the product have noted that sometimes, not always, when they try to run POSTMASTER via POSTMASTER 24, that after POSTMASTER comes up, it reports insufficient memory. They report that if they reboot the computer and try again, that it installs flawlessly.

The reason for this is that POSTMASTER 24 installs a memory-resident translation driver in high memory. If for any reason there is already a high memory resident program of any great size located up there, then when PM24 installs itself below it, it will consequently encroach on the buffer space required by POSTMASTER. Thus the error message.

What this should teach us is that when we run a new application, we should first remove any previous data from our computer that is not used anymore. I have never run into this problem because by habit I always start the system "fresh" with each new application. Thus, without even thinking, I reboot my computer before going on to a new application. I guess that's why some people can use a program for years without a hitch, and others can't go 5 minutes before running into trouble.

SLASHED ZERO ON DMP400

Those looking to eliminate the slashed zero on the DMP400 in the data processing mode are out of luck. The slashed zero is hard coded into it. Of course, one could get around it by installing a similar filter as that for the BREAK and CLEAR key covered previously to substitute a capital "O" (OH) letter in its place. Better yet, why not just type the letter in, in place of zero?

PSCRIPT vs SCRIPT

Years ago POWERSOFT came out with a program called PowerSCRIPT which patched Disk SCRIPSIT to add several features to it, such as display directories and print special characters.

I have authored a program called SCRIPT which does this and much more. Plus it is a stand-alone package, not a "patch" utility; but a full-blown word processing program. It takes up where SCRIPSIT left off, adding fists full of features, but at the same time

remaining easy to use. One feature I had added to the Model 4 version which has been in great demand is the ability to execute SCRIPT from a JCL file, and when you enter END on the command line to return to DOS, the JCL file will continue. I mention this because a number of people have been asking for a patch to PSCRIPT to do this. Well, you can bet I'm not going to give one if it leans against my own efforts. Get SCRIPT. There's more power at low cost.

BUGLESS MAKEICN

One reader has reported that he cannot use the keyboard movement commands of the MAKEICN/CMD program in CN80's POSTMASTER SUPPORT UTILITIES after using a mouse-driven program. Well, the reason for this is stated in the documentation for MAKEICN. It tells you that if a mouse driver is detected, it will use the mouse =instead= of the keyboard for movement control. So take advantage of the mouse, my friend. It's much easier to use than beating on the arrow keys to position the capture box, anyway.

MAKEICN allows you to capture an 88 x 52 dot portion of a high resolution screen and save it to an individual icon file, which can be used with POSTMASTER (and MagicDraw). You can use the ADDICN/CMD utility to build a library file of up to 30 icons. Handy as heck.

WHERE'S MY SOAPBOX?

Looking back, who would have ever imagined that the current TRS-80 program authors would be offering innovative, superior software that makes all the previous commercial-grade software of a few years ago look like Kindergarten Computing? We keep finding more and more ways to exploit the technology of our machines. If the IBM PC market would fully exploit their technology, instead of dumping each stage before full advantage could be made of it, I doubt very much that they would have reached the point where its is vitally essential to have at least 4 Megabytes of internal memory, much more than 100 Megabyte hard drives, and out of this world clock speeds just to do a serious task. One reason for the current PC progression is that the programs have been written with codes so =incredibly= inefficiently that vast RAM and disk storage requirements are needed to hold these kindergarten-code monsters, and a

fast clock just to bring this long stream of code up to a tolerable speed (the PC clock speed benchmark is deceiving, because PC's are slow at executing an instruction, as opposed to our Z80 machines, which can execute several times the instructions at a comparable clock speed). To me, this whole process is totally unacceptable. Fact is, I don't even consider most PC "programmers" as programmers in the true sense of the word. Were they real programmers; innovative, superior and fast software would still be possible on a floppy-based system with 128K or 256K of RAM. Unfortunately, the PC industry does not take any time to refine a product (unless you want to buy their semi-annual upgrades -- which bring a product a little bit closer to what they should have been in the first place), or try to optimize their programs, and thus speed up their code. Although I like using Microsoft WORD, this program is only one of Microsoft's products that are so full of garbage code whose only purpose seems to be to eat memory and time, and so incredibly full of redundant code that it's a crying shame. Microsoft Windows 3.1 itself has over 800,000 lines of code. This opposed to MagicDraw, which has just less than 10,000 lines of code. No wonder entire teams are required to produce PC software. Teams where nobody seems to know, or have the time to see what the other people on the team are doing.

The PC technology is a good platform, but it is committing suicide. If only the operating system(s) available on it were not so outdated and full of kludge work-arounds. If only their third party vendors would take the time to put out efficient, quality software. After all, where but in the PC industry will you see a company that admits serious bugs in their code, but simply in an off-hand manner tells everyone that they will have to wait until the next release of the product to get it fixed. Fat chance getting a fixed program free of charge, as it should be, because the common practice is to add a few enhancements so that they can call the bug fix an upgrade, which means that you will have to pay a steep "upgrade" fee to get the new version which repairs the serious bug. What this boils down to is that =YOU= must pay to have their bugs fixed. This is a =totally= unacceptable business practice. They may be "getting away with it" for now,

but rest assured that this will not continue. The cries of disgust are becoming louder and louder. Large businesses, where the real money comes from, are usually easy going and just go with the flow, writing off such expenses to lower their corporate taxes, but as they begin to realize that such constant whittling away at their profit margins are getting steeper and steeper, they will begin to cry out too, and that will mark the end of the PC industry as it is currently defined.

On top of this, the PC market is the source of the absolute =worst= documentation you can imagine. I see so many books on how to write good documentation (however, two books I know off are total losses because their authors don't know how to communicate an idea), so why is it that there are so many bad docs? Ah, there is nothing like picking up a new PC software package that you have to wheel home on a fork lift, and be expected by its vendors to trudge your way through not just one thick book that is not written in any sensible order, but several volumes of such tripe.

Yep, I think I'll stick with the TRS-80 for a while.

CONCLUSION

Well, so ends another column, as begins a new year. Remember, take advantage of the 10% discount CN80 is offering and get MagicDraw and other CN80 products at an even greater price. Happy holidays!

-David Goben

LPRINT FROM DOS

by Richard Snow

This article describes three utility programs that I am asking CN80 to include in their next Disk Series diskette. (*Disk Series Number 20*) The programs allow you to print single lines of text and send special print commands to the printer directly from DOS.

The idea is to give you full control of the printer with a minimum of keystrokes. I

used my original 'LPRINT' program to set up the printer in various modes before printing out the buffer from a simple text editor or listing a file to the printer. It worked well, but I often needed to look up special printer codes in the printer manual.

In the September 1992 issue of CN80, David Goben wrote an article describing his two programs, FMTPRT9/CMD and FMTPRT24/CMD. It was then that I realized what the LPRINT/CMD program was missing. If it could include his special printer commands, the program would be even easier to use. Thank you, David!

LPRINT/CMD was completely re-written to include custom two letter commands for Epson compatible printers. IPRINT/CMD was then written for IBM compatible printers. Both of these modes are available on the Seikosha SP-2400 printer. IPRINT/CMD works the same as LPRINT/CMD except that the two letter commands are written specifically for the IBM type of printer.

LPRT24/CMD was written later for the 24 pin Epson type printers. Since I do not own a 24 pin printer, I have little access to the commands that are unique to these printers. Fortunately, CN-80 provided me with commands for n/180" and n/360" line spacing. LPRT24/CMD is otherwise nearly identical to LPRINT/CMD.

The programs are easy to use. Simply type LPRINT (IPRINT or LPRT24) followed by the commands and text to be sent to the printer. If 'LPRINT <ENTER>' is keyed in without any additional characters, a full screen Menu of the functions is displayed. You can then type up to 255 characters for printer output.

Number data or ASCII values may be entered as decimal numbers from 0 to 255. A carriage return, for example, could be output by entering the number 13. Numbers must be separated from each other by Commas, Semicolons or Spaces. Parenthesis are optional, and may be used to group numerical data in graphics commands if desired.

Text or ASCII characters need to be enclosed in either 'Single Quotes' (apostrophes) or within "Double Quotes"

(quotation marks). To print a string containing an apostrophe, enclose the string within "Quotation" marks. To print a string containing a quotation mark, enclose the string within 'Single Quotes'.

Commands may be separated by semicolons, commas, spaces or other characters if desired, but it is not required. A Semicolon at the end of the line suppresses the carriage return as in BASIC.

The '@' character is used as a simple way of entering escape codes. @_ is the same as ESC "_" where "_" can be any character having an ASCII value from 33 (!) to 126 (~). For example, @E will send a CHR\$(27) "E" to the printer and designate Emphasized character mode on an Epson or IBM printer. If a command has additional ASCII characters, they must be enclosed in single or double quotes. For example a sequence such as 'ESC "[@ 4 0' could be entered as:

@['@' 4,0 or @["@ 4 0 or @[64;4;0

If a space immediately follows the '@', then the command character must be enclosed in quotes or expressed as a decimal number. For example, an 'Escape Space' command can be entered as '@ " "' or '@ 32'. To select the condensed mode on a Radio Shack printer, enter '@ 20'. This is the same as 'CHR\$(27) CHR\$(20)' in BASIC.

There are important differences in command syntax from David Goben's programs. LPRINT, IPRINT and LPRT24 output only short lines of text and do not keep track of the printer status. A backslash is NOT required in front of any of the commands because they do not interfere with text which is enclosed inside of quotes. Many of the functions listed in the Menu are followed by 'y/n' to show that the function can be turned on and off. Type 'n' after the function to turn it off. 'Yes' is the default, so the functions do not need to be followed with a 'y'. All commands can be entered in either upper case or lower case.

The following list of commands shows the equivalent printer code in single quotes. Consult your printer manual for a more detailed description of the functions. Commands designated (Epson) are used in the LPRINT and LPRT24 programs. Functions designated (IBM) are only for

IPRINT. Commands designated (9 pin) are used in LPRINT and IPRINT. Even if your printer does not support most of the Epson or IBM printer commands, these programs offer enough flexibility to be used with your printer.

BA or BS: BACKSPACE '8'

C0 - C12: CHARACTER SET 'ESC R' (Epson)

C1: IBM CHARACTER SET 1 'ESC 7' (IBM)

C2: IBM CHARACTER SET 2 'ESC 6' (IBM)

CA: IBM ALL CHARACTER SET 'ESC \'
(IBM) The program counts the characters within quotes or ASCII number data and prints these in the 'ALL CHARACTER' mode. It then returns back to IBM Character Set 1 or 2.

CO: CONDENSED Characters '15' COn = '18'

CR: CARRIAGE RETURN '13'

DB: DOUBLE High and Double Wide 'ESC [@' (IBM)

DH: DOUBLE HIGH 'ESC w' (Epson) 'ESC [@' (IBM)

DR: DRAFT Mode 'ESC x 0' (Epson) 'ESC I 0' (IBM)

DS: DOUBLE STRIKE 'ESC G' DS_n = 'ESC H'

DW: DOUBLE WIDE 'ESC W'

EL: ELITE 'ESC M' EL_n = 'ESC P' (Epson)

EL: ELITE 'ESC .' EL_n = '18' (IBM)

EM: EMPHASIZED 'ESC E' EM_n = 'ESC F'

F0 - F9: FONT Select - Turns on the NLQ mode using 'ESC x 1' and selects font 0-9 using 'ESC k'. (Epson)

F0 - F7: FONT Select 0-7 'ESC I' (IBM)

FF: FORM FEED '12'

GR: GRAPHICS Single Density 60 dots per inch. 'ESC K' Graphics number data is to follow this command. The numbers must be separated by commas, semicolons or spaces. Any other character terminates the automatic count of the graphics data. Graphics data can be enclosed in parenthesis if desired.

GD: GRAPHICS DOUBLE Density 120 dots per inch. 'ESC L' Same format as 'GR'

GQ: GRAPHICS QUADRUPLE Density 240 dots per inch. 'ESC Z' Same as for 'GR'

G0 - G7: GRAPHIC Modes 'ESC *' (Epson)
Check your printer manual for graphic modes 0 to 7. These commands are to be followed with graphics data same as 'GR'.

G8 - G15: GRAPHIC Modes for 24 Pin Printer 'ESC *' (LPRT24) One dot is counted for 3 bytes of data.

G9: 9 PIN GRAPHICS 'ESC ^' (LPRINT)

Follow this command with Graphic mode 0-7, then same as 'GR'

IT: ITALIC 'ESC 4' IT_n = 'ESC 5' (EPSON)

JA: JUSTIFY ALL 'ESC a 3' (Epson)

JC: JUSTIFY CENTER 'ESC a 1' (Epson)

JL: JUSTIFY LEFT 'ESC a 0' (Epson)

JR: JUSTIFY RIGHT 'ESC a 2' (Epson)

L0: 72 LINES per Page 'ESC 3 33' (9 Pin)
'ESC + 55' (24 Pin)

L1 - L216: LINES per inch 'ESC 3' (9 Pin)

The program divides the number into 216 and rounds off the result to the nearest integer.

L1 - L360: LINES per inch 'ESC +' (24 Pin)

Same as above except divides the number into 360. L1 outputs 'ESC 3 180'.

L6: 6 LINES per inch 'ESC 2' (Epson)

L8: 8 LINES per inch 'ESC 0'

LF: LINE FEED '10'

LQ: Near LETTER QUALITY 'ESC x'
(Epson) 'ESC I 3' LQ_n = 'ESC I 0' (IBM)

ML or LM: Set LEFT MARGIN 'ESC I'
(Epson)

MR or RM: Set RIGHT MARGIN 'ESC Q'
(Epson)

MS: MARGINS SET Left & Right 'ESC X'
(IBM)

OV: OVERSCORE 'ESC _' (IBM)

PA: PAPER ADVANCE 'ESC J' Moves paper up given number of Dot units, 1-72 lines or 1-12 Inches. 9 Pin printers can also advance 1-30 Centimeters.

PI: PICA 'ESC P' (Epson) '18' (IBM)

PO: PAPER OUT Detection 'ESC 9' PO_n = 'ESC 8' (LPRINT)

RV: REVERSE Feed 'ESC j' (IBM) Moves paper back given number of Lines.

RV: REVERSE Feed 'ESC j' (Epson) Moves paper back given number of Dot units, 1-12 Inches, 1-72 Lines (n/6"). LPRINT/CMD can also reverse feed 1-30 Centimeters.

S0 - S3: STYLE 'ESC q' (Epson)

SB: SUBSCRIPT 'ESC S 1' SB_n = 'ESC T'

SK: SKIP PERFORATIONS 'ESC N' SK0 or SK_n = 'ESC O'

SU: SUPERScript 'ESC S 0' SU_n = 'ESC T' TA or >: Tab '9' The Carriage Return is suppressed if the line ends with '>'

TS: TAB SET 'ESC D'

UL or UN: UNDERLINE 'ESC -'

VT: VERTICAL TAB '11'

-Richard Snow

KEY/BAS Program Listing Number One by David Goben

```
10 'DATA POKE FORMAT CREATED ON DATAPOKE/BAS
20 CLS:PRINT"BUILDING 'KEY/CMD'":RESTORE
30 OPEN"O",1,"KEY/CMD":L=110-10
40 CS=0:L=L+10
50 READ A$:IF A$="END"THEN CLOSE:END
60 IF LEFT$(A$,1)="-"THEN 90
70 A=INSTR(HX$,LEFT$(A$,1))*16+INSTR(HX$,RIGHT$(A$,1))-17
80 PRINT#1,CHR$(A);:CS=CS+A:GOTO 50
90 IF VAL(MID$(A$,2))=CS THEN 40 ELSE PRINT"CHECKSUM ERROR IN LINE"L:END
100 "" DATA AREA ""
110 DATA 05,06,4B,45,59,20,20,20,01,6A,00,52,2A,16,40,22,3E,52,23,23,-905
120 DATA 23,23,11,39,52,46,04,1A,BE,20,06,13,23,10,F8,18,19,ED,5B,11,-1266
130 DATA 44,ED,53,37,52,21,67,52,01,33,00,ED,B8,ED,53,11,44,13,ED,53,-1960
140 DATA 16,40,60,68,C9,18,06,67,52,03,4B,45,59,CD,00,00,FE,1F,28,F9,-1717
150 DATA FE,01,28,F5,FE,11,28,07,FE,51,28,03,FE,71,C0,F5,3A,80,38,E6,-2512
160 DATA 03,28,0B,3A,40,38,E6,10,28,04,F1,3E,01,C9,F1,C9,02,02,00,52,-1555
170 DATA END
```

KEY/ASM Program Listing Number Two by David Goben

;KEY/ASM -- FOR MODEL III

;THIS PROGRAM DIASABLES BREAK AND CLEAR ON A MODEL III
;BREAK CAN BE ACTIVATED BY SIMUTANEOUSLY PRESSING
;SHIFT-DOWN ARROW-Q

;DEA ASSEMBLER FORMAT

	ORG	5200H	
; .REF	'EQUATE3'		
@MAIN:	LD	HL,(4016H)	;GET KEYBOARD VECTOR
	LD	(ENTRY+1),HL	;SAVE
	INC	HL	;POINT TO NAME
	INC	HL	
	INC	HL	
	INC	HL	
	LD	DE,KEY+4	
	LD	B,(HL)	
	INC	B	;DATA LENGTH
MAINLP:	LD	A,(DE)	
	CP	(HL)	
	JR	NZ,USEIT	
	INC	DE	
	INC	HL	
	DJNZ	MAINLP	;CHECK ALL
	JR	EXIT	;ALREADY PRESENT
; USEIT	LD	DE,(HIGH\$)	;GET HIGH MEMORY ADDRESS
	LD	(KEY+2),DE	;SAVE
	LD	HL,LAST-1	
	LD	BC,LAST-KEY	
	LDDR		;MOVE DATA UP

Cont'd on next page.

```

LD      (HIGH$),DE      ;SAVE NEW HIGH MEMORY ADDRESS
INC     DE              ;POINT TO DATA
LD      (4016H),DE      ;SAVE NEW KEYBOARD VECTOR
EXIT    LD      H,B      ;ZERO HL
LD      L,B
RET     ;DONE
;-----
;DRIVER
;-----
KEY     JR      ENTRY
DW      LAST-1
DEFT    'KEY'
ENTRY   CALL    $$      ;CALL KEYBOARD
CP      CLR      ;CLEAR CODE?
JR      Z,ENTRY  ;YES
CP      BREAK    ;BREAK CODE?
JR      Z,ENTRY  ;YES
CP      17       ;CTRL-Q?
JR      Z,CTRLQ   ;YES, TEST
CP      'Q'
JR      Z,CTRLQ
CP      'q'
CTRLQ   RET      NZ      ;NOT Q
PUSH    AF        ;SAVE
LD      A,(3880H)
AND     11B       ;CHECK FOR SHIFT
JR      Z,NOTQ    ;NOT
LD      A,(3840H)
AND     1<4       ;DOWN ARROW?
JR      Z,NOTQ    ;NO
POP     AF        ;ELSE CLEAR STACK
LD      A,1       ;BREAK KEY
RET
;
NOTQ    POP      AF
RET
LAST:
;-----
END      @MAIN

```

BLOOD/BAS Program Listing Number Three by Roger L. Favorite

```

1 '    *** BLOOD/BAS ***      Date saved 05/04/92      Roger L. Favorite      1010
Traverse Lake Rd.      Cedar, MI 49621
2 '    Prints a 2 week form for recording blood sugar values at 4 times per day      with the
amounts of regular and lente insulin taken at those times.      Also comments of activities can be
recorded.
3 '    Program runs on Radio Shack Mod 4 with EPSON FX-80 printer.
10 CLS:PRINT@250,"How many copies of the GLUCOSE monitor sheets do you want?"
20 PRINT@444,;:INPUT;Q
90 DEFSTR`V
100 E$=CHR$(27): UN$=E$+"-1": UF$=E$+"-0": L8$=E$+"0": L10$=E$+"3"+CHR$(22)

```

Cont'd on next page.

```

101 BKSP$=E$+"J"+CHR$(27): V=CHR$(124)
104 DATA " MON "," TUE "," WED "," THU "," FRI "," SAT "," SUN "
105 FOR I=1 TO 7:READ DAY$(I):NEXT
150 FOR PAGE = 1 TO Q
155 LPRINT E$@"E$CHR$(15)E$Q"CHR$(137);
200 LPRINT E$"W1 INSULIN BLOOD GLUCOSE/INSULIN MONITORING RECORD"
210 LPRINT E$"J"CHR$(36)" "UN$" "UF$" "UN$"
"UF$
215 LPRINT L8$ " B L D B"
220 LPRINT " D T K U I D"
222 LPRINT " A Y F N N T"
225 LPRINT " T P S C N M A.M. P.M. BED- "
228 LPRINT " E E T H R E MEAL NOON MEAL TIME NOTES: "
240 FOR LOOP=1 TO 7: GOSUB 500: NEXT LOOP
250 LPRINT STRING$(4,10)
260 FOR LOOP=1 TO 7: GOSUB 500: NEXT LOOP
270 LPRINT STRING$(2,10)
280 LPRINT TAB(2)"BLOOD/BAS Dr. Lee Warnaar 947-9320"
281 LPRINT
282 LPRINT TAB(2)" Pager: "
290 LPRINT CHR$(12);
300 NEXT PAGE
310 END
500 '
503 IF LOOP>1 THEN GOTO 510
506 LPRINT BKSP$UN$" "UF$" "UN$" "UF$" "UN$" "UF$" "UN$" "UF$" "UN$" "UF$" "UN$" "UF$" "UN$"
"UF$" "UN$" "UF$" "UN$" "UF$" "UN$" "UF$" "UN$"
"UF$;E$J"CHR$(6)
510 LPRINT L10$E$W0"DAY$(LOOP)E$W1"V" "V" "V" "V" "V" "V" "V" "V" "V" "V" "V"
520 LPRINT " "V"R"V" "V" "V" "V" "V" "V" "V" "V" "V" "V" "V"
530 LPRINT " +--+--+--+-"V" "V" "V" "V" "V" "V"
540 LPRINT " "V"L"V" "V" "V" "V" "V" "V" "V" "V" "V"
550 LPRINT " "V" "V" "V" "V" "V" "V" "V" "V" "V" "V"
560 LPRINT BKSP$UN$" "UF$
569 IF LOOP=7 THEN GOTO 580
570 LPRINT " "V" "V" "V" "V" "V" "V" "V" "V" "V" "V"
580 RETURN

```

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1993

VOLUME NUMBER	ISSUE	ADVERTISING DEADLINE	MAILING DATE
VOL. 6 # 1	January	Dec. 14	Dec. 29
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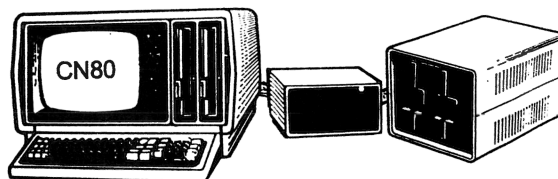
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by Leonard Lorden

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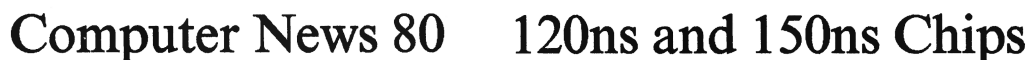
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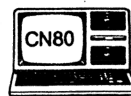
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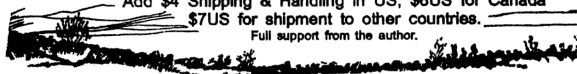
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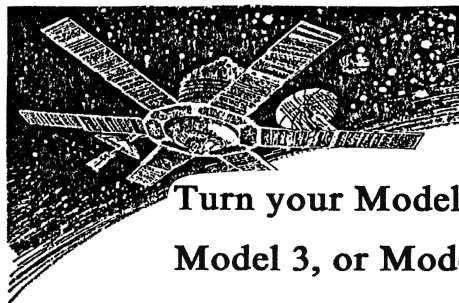
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Introducing ED-IT for the Model 4

by Mark Allen Reed

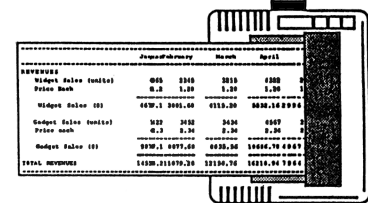
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1/8/80	0.78	0.78
1/9/80	0.39	0.39
1/10/80	0.19	0.19
1/11/80	0.09	0.09
1/12/80	0.05	0.05
1/13/80	0.02	0.02
1/14/80	0.01	0.01
1/15/80	0.00	0.00
1/16/80	0.00	0.00
1/17/80	0.00	0.00
1/18/80	0.00	0.00
1/19/80	0.00	0.00
1/20/80	0.00	0.00
1/21/80	0.00	0.00
1/22/80	0.00	0.00
1/23/80	0.00	0.00
1/24/80	0.00	0.00
1/25/80	0.00	0.00
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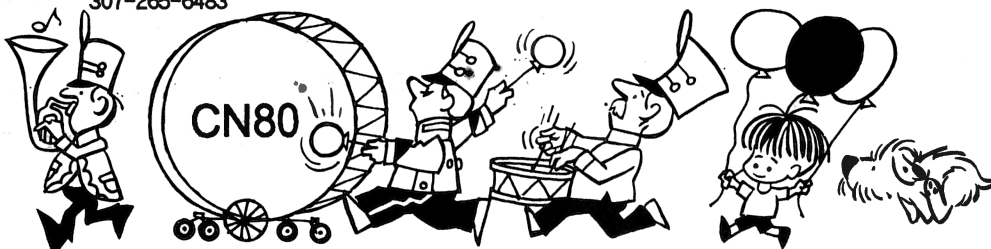
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For Model 4 DOS 6.x or Model III LDOS 5.3. FFORMAT is the absolutely FASTEST disk formatting utility available from anyone! Format your 3-1/2" or 5-1/4" disks trouble free for any format in up to half the time! FFORMAT will format a 1-sided double density 40-cylinder disk in 18 seconds! Works like FORMAT/CMD, but has greater versatility, options and speed. You can even apply a high level format and verify read the partitions of your hard disk with FFORMAT -- no more fumbling with one or more separate utilities to do this. You can even purge all files from a disk in seconds when you specify the PURGE and VERIFY=NO parameter. Specify BIG and QUERY=NO for easy 2-sided 80-cylinder formats on 3-1/2" disks. Eliminate the doldrums of your time-consuming disk formatting ritual with FFORMAT. **\$15** State Model 3 or 4 when ordering.

Add (Z) S&H, please refer to the CN80 Product Guide Shipping Charge Schedule

DAVID'S MODEL 4 FILE UTILITIES

For TRSDOS/LS-DOS 6.x. Nine great file handling utilities to save you hours of work. DSPTXT: view ASCII files in forward and reverse, with word wrap, printed form setup, and inbedded graphics. INDEX4: list a disk's directory in alpha order -- add comments to describe them. ERASE: ensure data security -- totally erase all traces of a file from a disk. UNREMOVE: recovers file which have been removed via the REMOVE, KILL, or PURGE commands. SAVBAS: save an in-memory BASIC program after leaving BASIC. Plus many others. **\$9**

DAVID'S MODEL III LDOS FILE UTILITIES

Like above, but for LDOS 5.x. Contains eight utilities (SAVBAS not needed). Priced as above.

DAVID'S MODEL 4 SYSTEM UTILITIES

For TRSDOS/LS-DOS 6.x. 16 powerful system support utilities to streamline system maintenance. XMENDISK: the most powerful memdisk program going. XDRIVE: allows 1 drive to emulate 2. ONEPASS: the most powerful single-pass disk duplicator yet. VERDISK: verify the integrity of your disks. PRINT: control your printer from the DOS command level. Plus many more. **\$16** **\$3** S&H.

DAVID'S MODEL III LDOS SYSTEM UTILITIES

14 powerful system support utilities for LDOS 5.x. Features programs described above, less XMENDISK. Also features VIDX to greatly enhance your screen and character control. Priced as above.

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The most powerful I/III/4 integrated editor/assembler going. Contains both I/III and 4 versions. Has more enhanced features than any other. Conditional assembly, long label names, and plentiful math functions are only a part of its list of powerful features. Only thing not supported is Macros. This package also includes a disassembler, cross referencing utilities, and plenty of programming examples. DEA was used to write all the programs listed in CN80 by David Goben! DEA features the ability to reference addresses in, or include code from other disk files during an assembly. **\$49.95**

T62DOSXT

Extends the dating capabilities on TRSDOS 6.2.x DOS disks to Dec 31, 1999 with full compatibility with older, pre 6.3 DOS dating formats, as well as the newer dating format for LS-DOS 6.3. Includes many optional system patches, plus numerous useful utilities. **\$18**

PACK for TRS-80 & MS-DOS

Pack, unpack, compress, or superpack BASIC programs for faster operation and more efficient use of disk space. TRS disk includes versions for both Models I/III and 4. MS-DOS version requires DOS version 2 or higher. Please specify computer system when ordering. **\$17.95**

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Tandy 6000 HD	\$595	CM-11	\$135
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DMP 105, 106	\$ 55	DMP 2110 24 Pin	\$315
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DMP 133	\$115	DWP 510	\$125
DMP 200	\$ 85	DWP II	\$ 95
DMP 420	\$115	DWP 520	\$195
DMP 430	\$145	Diconix 150 Inkjet Portable	\$ 95
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DMP 2100P 24 Pin	\$295		

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for model 3's and 4's

Tandy 5 Meg HD.	\$195	20 Meg IDE HD.	\$125
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20 Meg Hard Card	\$165		

*All hard drives include cable and software.

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Deskmate	\$ 45	Double Duty (128K req. use 2 different programs at once)	\$ 19
Payroll	\$ 15	Quik Pro III	\$ 15
Money Decisions Business Management	\$ 10	Visicalc	\$ 25
Money Decisions II Real Estate and Loan Analysis	\$ 10	Vidiotex Plus	\$ 19
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C Basic Language	\$ 25	The Producer Disk System Owners Manual (program writer)	\$ 30
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Disk Scripsit	\$ 25	TRS DOS Version 6 4/4P	\$ 29
Accounts Payable	\$ 25		

Model 3 Software

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Disk Course	\$ 20	General Ledger	\$ 12
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Accounts Payable	\$ 10	Video-Tex Plus	\$ 15
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Modem 80	\$ 20	Compiler Basic	\$ 10
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Cobol	\$ 19	Mini Pacs (small bus. accounting)	\$ 10

*All equipment is guaranteed to be in good working order.

*Equipment is cleaned and tested.

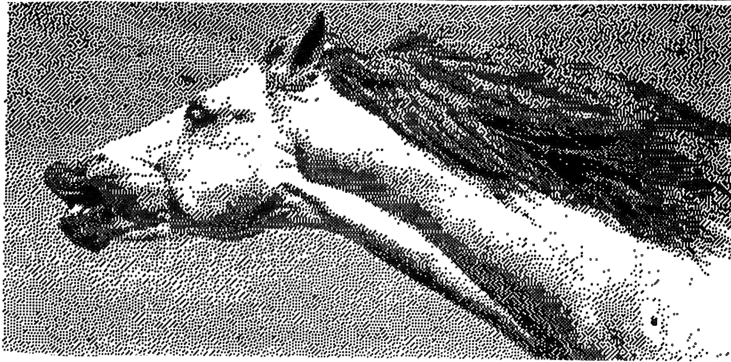
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by J. F. R. "Frank" Slinkman

Send GIF (Graphics Interface Format) high resolution graphics to and receive high resolution graphics from computers of different types with your Model 4 and GIF4MOD4.

A HIGH RESOLUTION BOARD IS HIGHLY RECOMMENDED BUT NOT REQUIRED. If you have a high resolution graphics board, GIF4MOD4 will decode any GIF image up to 640 pixels x 480 pixels x 256 colors and put the image on your screen. If you do not have a high resolution board installed in your Model 4, GIFMOD4 converts a GIF format to /HR format. The HR utilities packages available from CN80 will print out the /HR images on your printer.

CONVERSION TO GIF FORMAT

The HR2GIF program included in this package converts your /HR, /CHR, and /BLK files to the GIF format so they can be viewed on IBM, MAC and other computers.

\$37.95 + (Y) S&H

Order from Computer News 80



ACCURATE
SIMULATION OF A
1930'S MILLS
SLOT
MACHINE

by J. F. R "Frank" Slinkman

Want to see a real rendition of a working slot machine on your Model 4 computer screen? Then SLOT4 is the one that will do it. True revolving dials for payoff, moving handle, with coin dropping sound.

Amuse yourself and your kids for hours on end. Entertain your guests at your next party with your computer by letting them play SLOT4.

Model 4 with High Resolution Board Required

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ACCURATE
SIMULATION OF A
VIDEO POKER
MACHINE

by J. F. R "Frank" Slinkman

Play real poker on your computer with remarkable screen renditions of the playing cards. Optimum video poker strategy can be used on VIDPOKR4 or to play the real thing in Atlantic City or Nevada.

Any Poker fan will really enjoy playing against the computer, or practice the winning strategy that is included with this game package.

Model 4 with 128K and High Resolution Board Required

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PRINTERS FROM CN80 WITH PROVEN COMPATIBILITY

SEIKOSHA SP-2400 9 Pin Printer

80 Column Printer
300 Characters Per Second
IBM and Epson Compatible
Standard Parallel Interface
Built-In Push Tractor & Friction Feed
Easy Front Panel Controls
Paper Parking
Graphics
Two year Manufacturer's Warranty

\$ 179

Add \$ 6.00 S&H, Shipped by UPS only.

Fully supported by CN80 and completely compatible with PostMaster, Rembrandt, Long and Loud and all the programs, published by CN80. Will work with any Model III/4,4P or 4D computer.

SP2400 Ribbons

CN1041 \$6.40 ea. \$5.90 six or more.

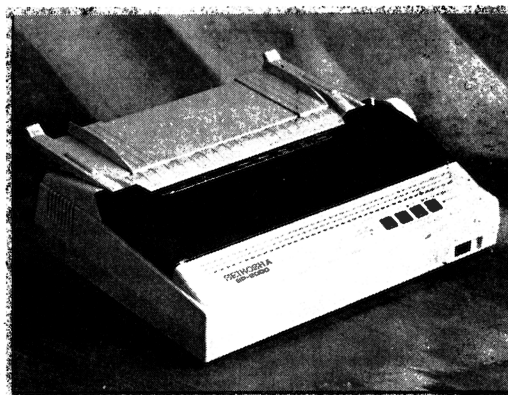
SL-90 Ribbons

CN1046 \$7.25 ea. \$6.75 six or more.

SEIKOSHA SL-90 PLUS 24 Pin Printer

80 Column Printer
240 CPS draft / 80 CPS LQ
IBM and Epson Compatible
Standard Parallel Interface
Built-In Push Tractor & Friction Feed
Easy Front Panel Controls
Paper Parking
Graphics 360 Resolution
Two year Manufacturer's Warranty

\$ 279



SEIKOSHA
A SEIKO GROUP COMPANY

PostMaster

Computer News 80

PostMaster by David P. Miller is a program that lets you create Posters, Letterheads and Mailing Labels with icons, borders, and many different character fonts using your dot matrix printer. The program runs on TRS-80 Model 4/4P/4D, with 64K or 128K of memory that has a MicroLabs or Radio Shack high resolution board installed.

This program has received the highest praise from reviewers of any program ever written for the Model 4. It allows you to use thousands of icons, borders, and fonts that are available from the File Cabinet Icon Library, it also allows you to add your own icons, borders and fonts.

Printers supported: Radio Shack DMP-130, -130A, -131, -132, -133, -430, -2100P, also any Radio Shack DMP printer with a 3-digit number with "3" as the second digit. All Epson and IBM printers. All other dot matrix printers that are Epson and IBM emulation printers. Seikosh SP-2000, -2000Plus, -2400. Okidata Microline 182 and 192. Panasonic KX-P1091, -1092, -1124, nonsuffixed. Star 10X, -15X, -NP, -NX, LC-10. C-ITOH 1510, 8510, C-130. (Note - Dot Matrix printers providing 300-dpi or 180-dpi may not work with PostMaster and no guarantees can be made concerning them.

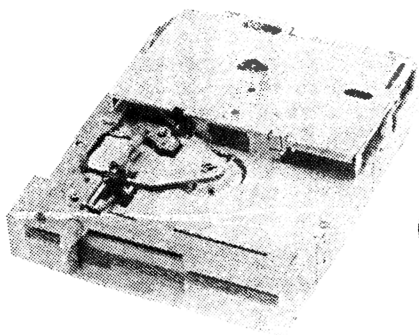
Printers that are not supported are: Radio Shack DMP-110, -120, -400, -500, -2100. Panasonic suffixed printers 1124i, 1124e, etc. Okidata 82, 92, and Daisy wheel printers.

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Low Power Consumption Plus High Performance



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3.5" Micro Floppy

High Storage Capacity.

5-1/4" SPECIFICATIONS

360K Capacity
40 cyl. (track)

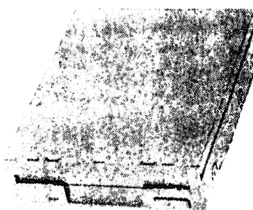
\$67 each 5-1/4 or 3-1/2
Complete with installation instructions
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TWO DRIVE INTERNAL DRIVE CABLE
\$10 add \$2.00 S&H in US. S&H
included when ordered with drives.

Compatible with all
Model I, III, 4/4P/4D Computers
and All their operating systems.

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720K Capacity
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Free

Disk Volume Prices: 1 to 10 Volumes \$3.50 ea. (X) S&H, 11 to 20 Volumes \$ 3.25 ea. (Y) S&H,
21 and over \$3.00 ea. (Z) S&H. 5-1/4" or 3-1/2" disks. No extra charge for 3-1/2" disks.



Download Through The Mail

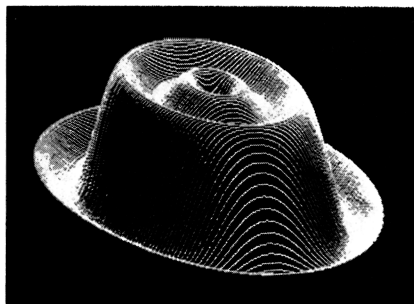
Grafyx Solution™

HIGH RESOLUTION BOARD FOR MODEL 3/4/4P/4D

Distributed by Computer News 80

Free Draw Program
Included

Hi-Resolution Graphics for Mod 4/4D/4P/III



Superior Hardware. The Grafyx Solution provides 153,600 pixel elements which are arranged in a 640×240 or on the Model III a 512×192 matrix. Hundreds of new business, personal, engineering, and educational applications are now possible. The hi-res display can be shown on top of the standard display containing text, special characters, and block graphics. This simplifies program debugging, text labeling, and upgrading current programs to use graphics. The Grafyx Solution fits completely within any tape or disk based Model 4, 4D, 4P, or III. Installation is easy with the plug-in, clip-on Grafyx Solution board.

Superior Basic. Over 20 commands are added to the Basic language. These commands will set, clear or complement points, lines, boxes, circles, ellipses, or arcs. The hi-res screen can be printed on any of 30 popular printers or saved or loaded to disk without leaving Basic. Areas may be filled in with any of 256 patterns. Sections of the screen may be saved and then put back using any of five logical functions. Labels can be printed in any direction. The viewing area can be changed. The entire screen can be complemented or cleared. Graphics Basic provides dot densities of 640×240 , 320×240 , 160×240 , and 160×120 , all of which can be used in the same display.



Superior Software. The board comes with over 40 programs and files which make it easier to use, serve as practical applications, demonstrate its capabilities, and serve as programming examples. The software works with TRSDOS 1.3, 6.1.2, 6.2, 6.3; Dosplus 3.4, 3.5, 4; LDOS; and Newdos80. The Grafyx Solution is also supported by 30 optional applications programs: Draw, Bizgraph, xT.CAD, 3D-Plot, Slideshow, Mathplot, Surface Plot, Chess, etc.

Purchase a Grafyx Solution Hi-Res Graphics Board for \$ 99.00 and receive a free copy of DRAW a powerful graphics program which allows drawing or designs to be easily created on a Model III/4/4P/4D.

\$ 99.00 Add (Z) S&H

Specify Model 3, Model 4p,
Model 4 Gate Array, or
Model 4 Non Gate Array
when ordering. The boards
are different for each.
Please include phone number.



SAVE WITH OUR HIGH RESOLUTION COMBINATION PACKAGE NUMBER ONE

MicroLabs Grafyx Solution Board
MicroLabs Draw Program
PostMaster Program
Hi-Res Utilities Program
PostMaster Support Utilities
Five HiRes File Cabinet Volumes

A \$210.50 value if purchased separately.

All for the Super CN80 low price of

\$166.95

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ALREADY HAVE YOUR HIGH RESOLUTION BOARD INSTALLED - THEN

SAVE WITH OUR HIGH RESOLUTION COMBINATION PACKAGE NUMBER TWO

PostMaster Program
Hi-Res Utilities Program
PostMaster Support Utilities
Five HiRes File Cabinet Volumes

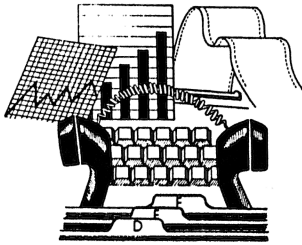
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All for the Super CN80 low price of

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ANSITERM 4

by Richard VanHouten

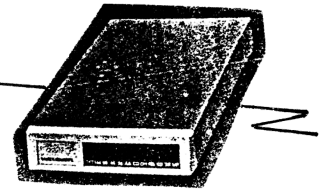
TRS-80 Model 4 High Resolution
Communications Program.

Supports ANSI (American National Standards
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graphics and file transfer by X-modem or
Y-modem.

System requires Model 4 with Modem and
High Resolution Board.

Program complete with printed manual.

\$ 30.00 (Y) S&H Order from CN80



2400 Baud External Modem

from Computer News 80

\$ 78

Plus \$4 S &H

2400 baud transmission speed
Hayes compatible
Compatible with Model 3/4/4D/4P
Compatible with IBM PC/XT/AT
Auto dial/answer
Eight status indicator lights
Built-in speaker with volume control
Second jack for local phone
Call progress and error detection
Ten year manufacturer's warranty
Manufactured in the USA

**Complete with all cables and
TRS-80 Communication Software**

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50 Pin Male Edge Card Mating Connector	4.95
50 Pin 25x2 Edge Card/Female	1.75
50 Pin 25X2 Header Female/Socket	1.25
50 Pin 25x2 Header Male/Plug w/mounting	8.50
50 Pin 25x2 Header Male/Plug no mounting	8.50
36 Contact Centronics Male (Printers)	4.00
34 Pin 17x2 Header Female/Socket	1.95
34 Pin 17x2 Edge Card/Female	1.35
34 Pin 17x2 Header Male/Plug No Mounting	7.50
34 Pin 17x2 Header Male/Plug W/Mounting	7.50
25 Pin DB25 (RS232) Male/Plug	3.00
25 Pin DB25 (RS232) Female/Socket	3.00
PC BOARD MOUNT	
34 Pin 17x2 Box Header - Straight Solder	2.50
50 Pin 25x2 Box Header - Straight Solder	4.50

CONNECTOR S&H

Add \$ 2.00 Shipping and Handling if
ordered alone.
Shipping and Handling included if ordered with
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DESCRIPTION	PRICE
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EXTENSION S&H	
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FLAT RIBBON CABLE	
25 Conductor	.38 per ft.
34 Conductor	.51 per ft.
50 Conductor	.75 per ft.

CABLE S&H

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CUSTOM CABLES BUILT UPON REQUEST
Call for price quotes.

TOP QUALITY PRINTER RIBBONS

Printer	Radio Shack Cat. Number	CN80 Number	Type	Price Each for One 6 or More	
LP I, II, IV	26-1413	CN1001	FABRIC REFILL	5.55	5.05
LP III, V	26-1414	CN1002	FABRIC CART.	6.38	5.88
LP III, V	26-1414	CN1003	FABRIC REFILL	4.79	4.29
LP VI/VIII, DMP 400/420	26-1418	CN1004	FABRIC CART.	5.60	5.10
LP VII, DMP 100	26-1424	CN1038	FABRIC CART.	6.00	4.50
DMP 110	26-1283	CN1005	FABRIC CART.	6.58	6.08
DMP130/130A/132/133/107	26-1236	CN1006	FABRIC CART.	6.40	5.90
DMP130/130A/132/133/107	26-1238	CN1007	FABRIC REFILL	5.00	4.50
DMP 500	26-1482	CN1008	FABRIC CART.	13.40	12.90
DMP 120, 200	26-1483	CN1009	FABRIC CART.	7.00	6.50
DMP 120, 200	26-1489	CN1010	FABRIC REFILL	4.85	4.35
DMP 430	26-1296	CN1013	FABRIC CART.	12.25	11.75
DMP 440	26-2809	CN1014	FABRIC CART.	19.30	18.80
DMP 2100, 2100P, 2110	26-1442	CN1015	FABRIC CART.	6.10	5.60
DMP 2100, 2100P, 2110	26-1442	CN1016	FABRIC REFILL	4.85	4.35
DMP 2120	26-2834	CN1017	FABRIC CART.	13.05	13.05
DMP 2120	26-2836	CN1018	FABRIC REFILL	7.90	7.40
LMP 2150	26-1287	CN1019	FABRIC CART.	8.00	7.50
DWP II, DWP 410/510	26-1419	CN1020	MULTI-STRIKE CT.	5.35	4.85
DWP II, DWP 410/510	26-1419	CN1021	M-S REFILL	4.50	4.00
DWP II, DWP 410/510	26-1449	CN1022	FABRIC CART.	6.55	5.95
DWP II, DWP 410/510	26-1449	CN1023	FABRIC REFILL	5.45	4.95
DWP 520, 230, 210	26-1445	CN1024	MULTI-STRIKE CT.	5.15	4.65
DWP 520, 230, 210	26-1445	CN1025	M-S REFILL	4.50	4.00
DWP 520, 230, 210	26-1458	CN1026	FABRIC CART.	5.60	5.10
DWP 520, 230, 210	26-1458	CN1027	FABRIC REFILL	4.80	4.30
DWP 220	26-1299	CN1028	MULTI-STRIKE CT.	7.95	7.45
DWP 220	26-1299	CN1029	M-S REFILL	3.60	3.10
DMP 300/2102	26-2819	CN1030	FABRIC CART.	7.15	6.65
DMP 300/2102	26-2819	CN1031	LONG LIFE CART.	6.85	6.35
ALPS ASP-1000	900-2326	CN1032	FABRIC CART.	6.60	6.10
EPSON FX/MX/RX-80	900-2327	CN1033	FABRIC CART.	5.50	5.00
EPSON LX/80/90	900-2328	CN1034	FABRIC CART.	5.00	4.50
PANASONIC KXP1090	900-2331	CN1035	FABRIC CART.	6.10	5.60
PANASONIC KXP1090	900-2331	CN1036	LONG LIFE CART.	7.35	6.85
STAR MICRON. NX1000	900-2332	CN1037	FABRIC CART.	6.45	5.95
PANASONIC KXP1180/1190/1191		CN1039	FABRIC CART.	6.90	6.40
PANASONIC KXP1180/1190/1191		CN1040	LONG LIFE CART.	7.60	7.10
SEIKOSHA SP-2000		CN1041	FABRIC CART.	6.40	5.90
DMP 500		CN1043	FABRIC REFILL	5.30	4.80
DMP 430		CN1044	FABRIC REFILL	5.60	5.10
ALPS ALLEGRO 24		CN1045	FABRIC CART.	7.25	6.75

ALL RIBBONS ARE BLACK, CART.= Plastic Cartridge, REFILL= Refills Only/No Cartridge.
Add for Shipping and Handling

1 to five items add (Y) 6 or more items add (Z)

Please refer to the CN80 Product Guide Shipping and Handling Schedule.

Some ribbons for the older Radio Shack printers are not stocked, but are still available by special order, please allow an additional week shipping time. All stock ribbons are shipped within 24 hours from the time the order is received. C.O.D orders accepted. Government and educational institution purchase orders are accepted. Sorry, we do not accept credit card orders.

Computer News 80 Product Guide

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CN80 BACK ISSUES Individual Copies	\$ 4.00 (V)
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All of 1988 Bound	\$ 18.00 (Z)
All of 1989 Bound	\$ 20.00 (Z)
All of 1990 Bound	\$ 22.00 (Z)
All of 1991 Bound	\$ 24.00 (Z)

CN80 INDEX on Disk	\$ 2.00 (V)
Complete index for CN80 1988 thru 1991.	
24 classifications of search.	
Specify LSDOS 6.3 or TRSDOS 1.3	

CN80 NEWCOMERS GUIDE VOL 1	\$ 7.95 (V)
Reprint of all CN80 "Newcomers Corner" part 1 to 8.	

CN80 DISK SERIES \$ 5.00 each (V)

NUMBER 1
All the programs printed in Vol 1 No. 1 thru No. 6.

NUMBER 2
All the programs printed in Vol 1 No. 7, 8 and 9.

NUMBER 3
All the programs printed in Vol 1 No. 10, 11 and 12.

NUMBER 4
All the programs printed in Vol 2 No. 1, 2 and 3.

NUMBER 5
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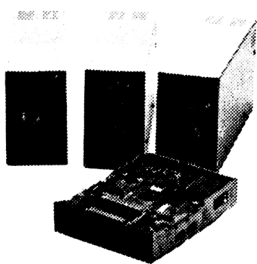
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